OCTOBER 1955

AMERICAN ARTISAN

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OCT

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

672

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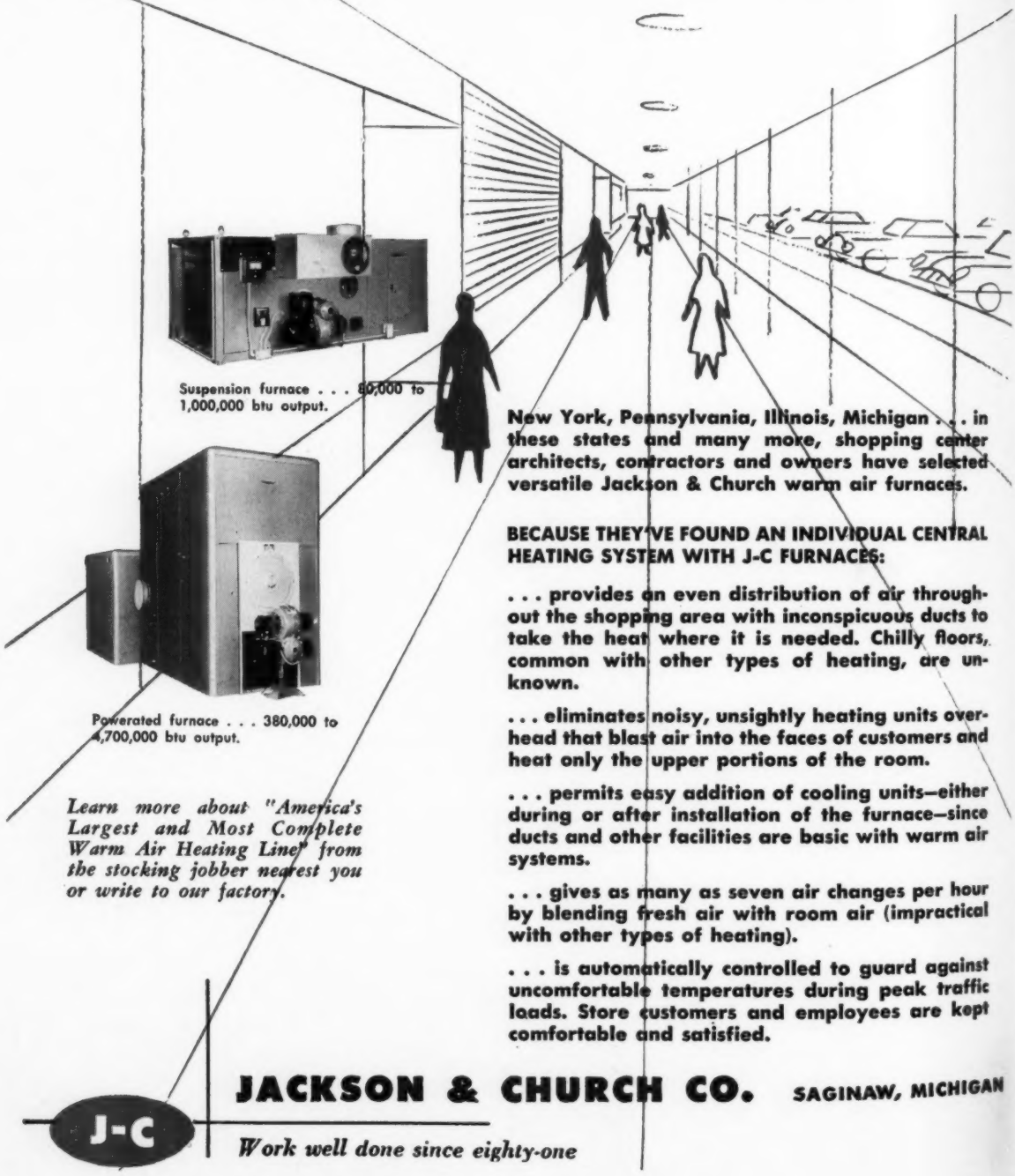
IN SUBURBAN SHOPPING CENTERS . . . the trend is to

JACKSON & CHURCH FURNACES



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NOW COMPLETELY CARTONED

A COMPLETE LINE OF STANDARDIZED PIPE, DUCT, AND FITTINGS FOR ALL TYPES OF RESIDENTIAL HEATING AND AIR CONDITIONING INSTALLATIONS.

Write for General Catalog 55

INDOOR COMFORT

Adelta Manufacturing Company, Inc.

21st & Ellsworth Streets, Philadelphia 46, Pa.

ADI STANDARDIZED PRODUCTS

AMERICAN ARTISAN

OCTOBER 1955

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Founded 1864

Volume 92 No. 10

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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Horizontal Winter Air Conditioner — Part of Mueller Climatrol's new, competitively-priced Suburbanaire line that also includes highboys, lowboys, and counter-flow units. Easily installed in attics, crawl spaces, cramped quarters. 100,000-Btu input.

Lowboy Winter Air Conditioners — For basement installation. Wide range of sizes from 90,000 to 675,000 Btu input to meet every need. Cooling easily added.

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People want automatic heat — want it because it's cleaner, more convenient. And Mueller Climatrol gives you everything it takes to make the sale — and win another satisfied customer: A complete line. A famous name. Advanced engineering. Quality construction. Smart styling.

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Automatic Heating

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D-194

NEARLY 100 YEARS OF MANUFACTURING QUALITY COMFORT EQUIPMENT

the editor's notebook

(continued)

Thumbing Through This Month's Artisan

. . . we drop in on Elgin Sheet Metal Co., Elgin, Ill., where *Dealer's New Showroom Makes 'Em Stop, Look and Listen.* We find out from an enthusiastic dealer how modernization of his showroom and addition of an arresting sign has pulled a new element of business into the shop — the walk-in trade, which has turned out to be a big factor in the increased profits which have resulted. We see how the air conditioning unit which serves the showroom doubles as a demonstrator and has brought in three sales in a month. Above all, we share the dealer's excitement over the 25 percent increase in inquiries which can be traced directly to the modernization job.

Venting . . .

AND WE consider th fundamentals involved in elimination of the elements of combustion with authors S. Konzo and H.D. Bareither, whose *Performance Standards Rate Flue Gas Venting Systems.* Analyzing the components and characteristics of the chimney, ventpipe and breeching, the authors come up with a proposed set of standards for dealers to consider in making heating installations.

Circuits . . .

AND WE find out how a *Short Course in Electrical Circuits Cuts Air Conditioning Woes* in Artisan's new "training program . . . in print" series designed to help dealers train their employees in

IT'S NEW...IT'S HERE
E 1/4 1/2 3/4 F
STOP FILLING →
Sentry's
AT-A-GLANCE
ODF* TANK GAUGE
gives exact reading level of oil in tank
at point of delivery!
Located outside of building at fill pipe, this new, easy-to-read fraction calibrated, pressure-tight gauge shows the exact level of oil in tank at all times! Saves costly, time consuming trips to basement and unnecessary unreeling of hose . . . Permits delivery without disturbing customer and eliminates spills as there is a "stop filling" indicator on calibration. Made of weather-proof materials throughout with thermometer indicator securely encased in plastic dome that will not fog or cloud up. No gears, cams, magnets, tapes or intricate mechanisms to get out of order. Write for complete information and low cost unit prices on this modern "delivery point" remote reading gauge today.
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"No more blind fills for me"
"No more spills with fills"
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. . . HOW MUCH IS NEEDED
. . . WHEN TO STOP FILLING
● Weather-tight plastic dome calibration assembly.
● Easy-to-read indicator.
● Shows exact reading level at all times.
● Made of quality oil, weather and corrosive resistant materials.
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● No complicated mechanism.
● Simple and quick to install.
● Lowest cost remote reading gauge on market.
On guard—24 hours a day
KRUEGER Sentry GAUGES
GREEN BAY • WISCONSIN

the editor's notebook

(continued)

all phases of their business. This month's contribution, by Lee Wilcoxon, tells how to determine the adequacy of electrical services in homes before signing an installation agreement. In addition to identifying the capacity of the service by such characteristics as size of the fuses, cabinets and wiring, the author outlines fundamentals of electric currents, defines service entrances and conveys to us the seriousness of the overload situation as seen by electrical inspectors and others who are closely associated with the problem.

Aluminum . . .

AND WE review the properties of aluminum with G. W. Birdsall, whose *Tips on Techniques Show How to Drill Aluminum with Shop Equipment.* We see how proper drill speeds, lubrication, point angles and clearances add up to good results in drilling, blanking, punching, and piercing of aluminum sheets with only the equipment used in most sheet metal shops.

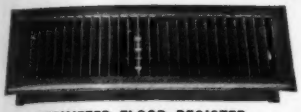
Did You Ever Meet a Hurricane?

LAST AUGUST the activities of hurricane Connie were closely watched by most of the people east of the Mississippi River and by me especially as I had scheduled a field trip to the New England states. On the scheduled day for leaving Chicago it looked like Connie wouldn't amount to much as hurricanes go, so I decided to make the trip by auto with a stop planned for Reading, Pa., to talk with author Sumner W. Reid about

THE MIDCO LINE . . .

a register for EVERY job

Pictured are just a few of the various styles we manufacture



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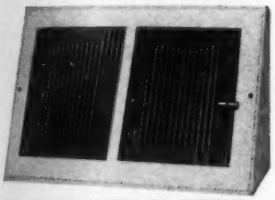

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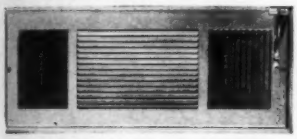

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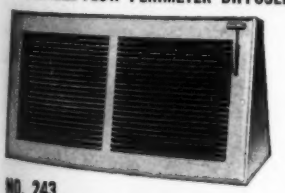

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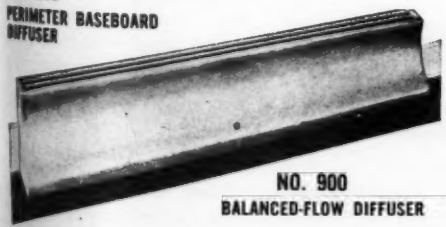

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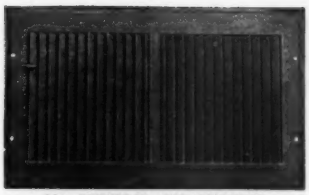

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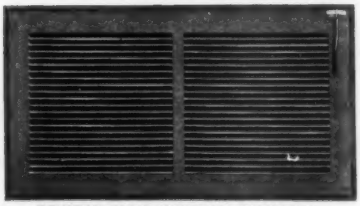

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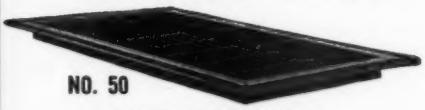

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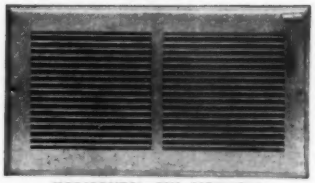
GRAVITY FLOOR REGISTER



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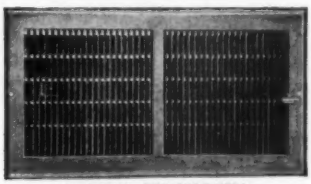

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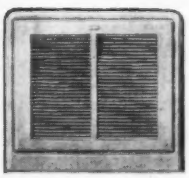

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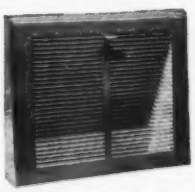

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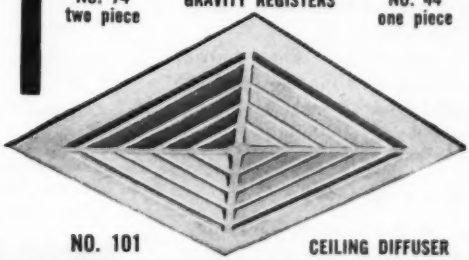


NO. 101
CEILING DIFFUSER

GET IT FROM YOUR JOBBER

MIDCO
REGISTER CORPORATION
1059 GRAND AVENUE • ST. PAUL, MINNESOTA

the editor's notebook

(continued)

future articles on the schedule. Everything went fine the first day — except that Connie decided to move inland.

The second day found your editor encountering sheets of rain bearing down from the north, gusts of wind that pushed the car to the edge of the road and local radio broadcasts that should have encouraged the abandonment of the trip for that day. But where can you find accommodations on the Pennsylvania Turnpike? Besides, editors have the same feeling about appointments that the Postal Department has about mail.

Thru a Hurricane's Eye

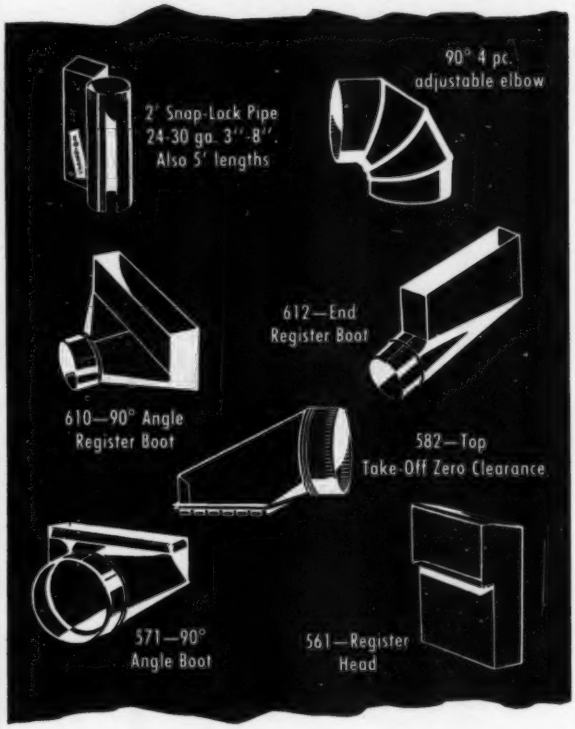
As I approached Harrisburg, Pa., at about 20 miles per hour, the radio announced that Connie's *eye* was expected to pass west of town about noon. Mentally, I calculated that I too would pass west of town at about noon. Yep — you are so right — I passed through Connie's *eye* on schedule. How did I know it was the *eye?* One minute the rain was coming in sheets from the north, the next, I was in a comparatively quiet zone, with very little rain and wind. About two miles further, the sheets of rain started again, this time coming from the south.

Conclusion: When hurricanes are in bloom, I'll find field trips to make in other sections of the country.

Diane Appears

As if one hurricane wasn't enough for one field trip I had the occasion to meet Diane and to see for myself the hardships that nature can devise when it gets out of control. I was in Boston when Diane decided to swerve eastward and dump tons of

JOBBERS! DEALERS!
SHEET METAL
CONTRACTORS!



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CHAMPION

CHAMPION FURNACE PIPE COMPANY
211 Eaton Street Peoria, Illinois

the editor's notebook

(continued)

water on the New England countryside. It rained hard Thursday and Friday, sometimes at the rate of one inch or more per hour.

In Boston the damage wasn't great; I got around to visit a number of the people in our industry by detouring around flooded underpasses. The radio reports were mostly about rising streams. When my schedule called for me to move to Springfield I felt that the only trouble I might encounter would be flooded underpasses with the inconvenience of local detours. How wrong I was!

The Rain's Aftermath

The day following the downpour of rain was clear and hot. I set out for Springfield, which was less than 100 miles away. Soon it became apparent that the detours were to be numerous and long. Each time I stopped to talk with a State Highway Department road guard, I'd ask about the condition of the road ahead. No one seemed to know anything about the conditions ahead — they knew only about the local situation. The radio broadcasts began to give road conditions into and out of Boston. One broadcast stated that the normal four hour drive from Boston to New York City would now take about 16 hours. Not long after this another broadcast said it was impossible to reach New York City, that water was flooding rivers, streams and reservoirs, that some towns in Connecticut and Massachusetts were expecting floods.

Reviewing the Situation

Four hours after leaving Boston I had reached Worces-

Even if you have a million dollars to spend . . . You can't buy a "better" machine than a Lockformer

ONE MAN WITH A LOCKFORMER

makes more pittsburgh locks than

SIXTEEN MEN with 8 BRAKES!

Lockformers make Pittsburgh and other seams in *seconds*, even on an eight foot sheet. Greater speed than this wouldn't justify added size and power requirements. Finished seams, in the opinion of sheet metal men, have always been "perfectly uniform". Extremely long life of equipment and an absolute minimum of maintenance have been established via the acid test of time.

No matter what yardstick you measure by, Lockformer equipment represents the ultimate in low cost, productive capacity. Lockformers save more time, more money, earn more actual profit, than any other type of equipment you can name.

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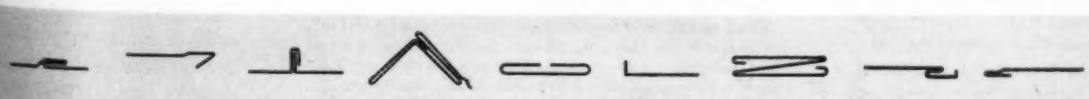


THE LOCKFORMER CO.

4615 WEST ROOSEVELT ROAD **CHICAGO 50, ILLINOIS**

ter (about 45 miles). I had given up on getting to Springfield and decided to go to Albany, New York, where I had several appointments for later in the week. I stopped at the State Police Barracks to ask directions that would get me out of the flooded area. After obtaining the necessary instructions I decided to call my friends in Springfield to cancel the appointments. To my amazement the telephone operator told me that only calls of an emergency nature could be put through. She defined an emergency call as one amounting to a case of "life or death."

The police officer had informed me that there was only one east-west route open — one that passed close to the northern border of the state of Massachusetts and to the north of the areas feeling the effects of the heavy rainfall. The condition of the roads from Worcester to this route were unknown but they had not been reported closed. The trip through the center of Massachusetts is one I will long remember. Many miles of road were covered by water that was axle deep and flowing across the roadway with such force that the car seemed to be constantly pulled toward the edge of the road.

Road of 'No Return'

Frequently the radio would make an announcement about the happenings on the various highways. On several occasions the announcers mentioned the road I was traveling, stating that such and such a section had just been closed to traffic or this bridge had been washed away. Each time such an announcement was made I had already passed that point, but it is an eerie experience to know that you are embarked upon a trip where you cannot turn around and return to a place you only recently left behind.

After 15 hours I reached the safety of eastern New York State and took a deep breath of relief — knowing that the worst was behind me. As in all such experiences, once the immediate personal problems disappear, you wonder about the fortunes of those who were not as lucky as you. Reports have been pouring in steadily and everyone in the nation knows what havoc Diane brought.

We have heard from many of our friends in the flooded area and sympathize with the problems they must overcome to rebuild their homes, businesses and community spirit. Every facility that American Artisan has is at their disposal.

Long life . . . low upkeep make Nu-Way burners cost less

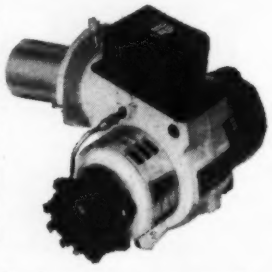
Nu-Way burners are less expensive to use and incorporate as standard equipment to your furnace or boiler, because we make them better — design them better . . . engineer them to last for many, many years, and still perform to our and your standards. Moreover, we take care of our own. Nu-Way's engineers and technicians are always available in the field and lab with technical help and information.

Take motor-pump alignment, for instance. Tolerance in a Nu-Way burner is only 0.0015 inches. This eliminates noise-causing vibrations . . . minimizes wear which naturally increases the pump life besides keeping service costs pared down to the bone.

Along with manufacturing the best and most practical oil burners, Nu-Way concerns itself with the good will of its customers. When a less perfect burner is used in a furnace — repairs are more frequent, operation is noisier. And, who does the customer blame? The burner manufacturer? No — chances are, the man who made the furnace gets the full load of blame. So why run the risk of unhappy customers by using a burner not engineered and designed for long life and smooth operation?

Good housings are important, too. Nu-Way burners are housed in sand-cast aluminum alloy . . . stronger, more permanent, thicker — and still, lighter in weight than thinner sections of other metals. We might use other metals, but long experience proves it's worth it to use the best. Sand-cast aluminum alloy won't warp or twist — holds its *shape permanently*, and therefore holds the motor and pump in permanent close alignment.

There are lots and lots of reasons . . . all good ones . . . why we feel sure Nu-Way burners are the best on the market. Ignition conductors are solid brass . . . won't sag, won't deteriorate. Transformers are built extra-heavy, with more turns of wire and more coil laminations to give sure-positive spark for quick starting at all times.



In designing our Nu-Way burners . . . we wanted to make them versatile and easy to care for. So, we made the mountings adjustable, for either floor or flange, whichever best suits your job. And, we put an extra-large hand hole in the rear of the burner. You can reach right in, make easy repairs . . . or pull the whole firing assembly clear out for cleaning.

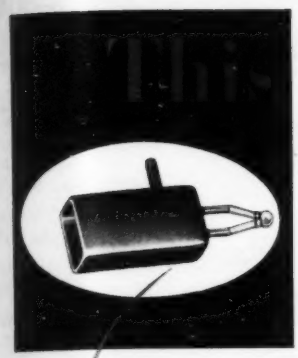
We're constantly looking for new ways to make our oil burners better . . . keep our engineering staff busy researching bigger and better improvements. The same pride in our present Nu-Way burners keeps us determined to use only the highest quality transformers, motors and other components in the future. And, even if the initial cost goes slightly higher . . . you can be sure they'll be worth it . . . they'll be made to perform even better . . . to last even longer.

Write to us—we'll send you our free bulletin No. N1132. It illustrates our seven brand new models that have all of these features — gives complete description and specifications in easy-to-read 4-color blocks. And, remember . . . first cost can be the least cost when it's the last cost. Nu-Way Corporation, Dept. AA-105, Rock Island, Illinois.

ABC Symbol Is Your Guarantee of Quality

EACH MONTH we publish the above symbol on our contents page. Perhaps you, as a reader, would like to know more about the meaning behind this symbol which can be displayed only by a publisher and member in good standing with the Audit Bureau of Circulations, a 40 year old organization whose members are dedicated by its code of ethics to produce a product that will serve the industry they represent to the best of their ability.

Twice each year our records are examined by specially trained auditors, who make



This revolutionary flame detector makes the primary difference...

in the **GENERAL CONTROLS**

PERFXRAY

The Modern Burner-Mounted Oil Burner Primary

✓ Burner and control assembled as one unit for easy installation.

✓ Factory-wired and factory tested to reduce field service problems.

✓ Compact design saves space—allows more location flexibility.

✓ Fail-safe, rugged construction assures service free operating dependability.

Factory-mounted right in the burner blast tube for instant response

Yes, this minute flame detector unit mounted right in the flame chamber of the burner is the "difference" in the PerfXray. It is metal-clad and hermetically sealed—impervious to shock, vibration, soot accumulation and age. It responds to heat—not light. It reacts quickly to flame loss, yet is not erratic with normal variations. It checks itself on every cycle... for fail-safe operation.

As a complete burner-mounted unit, it is application engineered for perfect performance, factory-wired and tested to eliminate field errors. Dealers, of course, appreciate the single-package inventory advantage—not to mention its installation and service ease. No complex circuitry to contend with... no service problems from improperly located draft controls. And its compact design makes it ideal for close-quarter locations—particularly with complete service accessibility from the front.

When you take the primary step toward perfect oil burner performance—put your best foot forward. Pick PerfXray. Contact the nearest of General Controls' 40 factory branch offices for further information.

1930 25 YEARS 1955 — 1955 GC YEARS OF LEADERSHIP

GENERAL CONTROLS

MANUFACTURERS OF AUTOMATIC CONTROLS FOR HOME, INDUSTRY AND THE MILITARY

GENERAL CONTROLS • PERFEX CONTROLS

40 FACTORY BRANCH OFFICES SERVING THE UNITED STATES AND CANADA

FIVE PLANTS: IRON MOUNTAIN, MICHIGAN • GLENDALE, CALIFORNIA • BURBANK, CALIFORNIA • SKOKIE, ILLINOIS • GUELPH, CANADA

the editor's notebook

(continued)

public their findings so advertisers may direct their selling message to the subscribers of our magazine. We are proud that out of the 3450 ABC members, American Artisan is the only publication serving the Warm Air Heating, Residential Air Conditioning and Sheet Metal Contracting industry with qualifications to meet the rigid requirements for membership in ABC.

ABC believes as we do in the value of paid circulation. Briefly, this means that if the product is worth reading, it's worth the small price required to become a paid subscriber. American Artisan serves over 9000 dealer-contractors from its 11,000 monthly subscriber roll. The other 2000 readers are wholesalers, engineers, architects, manufacturers and manufacturers' representatives, public utilities and many others. All are PAID subscribers. American Artisan is the only 100 percent paid circulation magazine in its field.

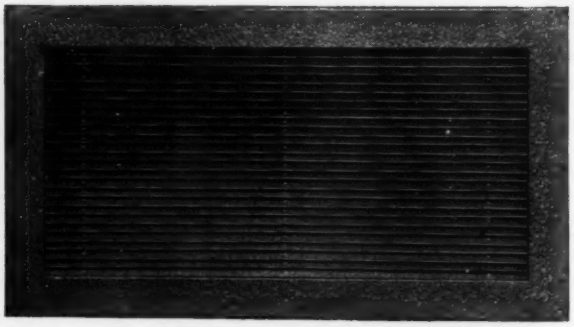
FHA Program Undergoes "Repairs"

IT'S INTERESTING to know that the Federal Housing Administration's Title I home modernization and repair program, under searching investigation a year ago, has itself been modernized and repaired.

This is the judgment of the National Better Business Bureau, Inc., New York City, reflected in a letter made public recently by FHA Commissioner Norman P. Mason and Cyrus B. Sweet, director of the Title I program. They quoted Allan E. Backman, executive vice president of the National Better Business Bureau, as saying there has been a marked nationwide decrease in irregularities in the FHA home improvement program during the past year. Mr. Mason and Mr. Sweet said that reports from local Better Business Bureaus support Mr. Backman's conclusions.

Government investigation last year disclosed that in some areas unethical dealers and salesmen were making false claims and conducting high pressure campaigns in the home improvement field. They have since been barred from doing any business with FHA.

NEW! Thin-Core Grilles For Doors—Partitions ¼" to ¾" Thick!



- **CUTS INSTALLATION TIME ½!**
- **EASY TO INSTALL — NO DANGER OF RUINING DOOR!**
- **COMPLETE — NO WOOD MOLDINGS TO ADD!**

A-J

First Grille ever designed specifically for thin doors and partitions. Anyone can install it in just a few minutes time. No close tolerances required . . . almost a half-inch extra on sides for positioning. Telescoping auxiliary frame fastens to grille with posts and screws. Clamps tight. No holes to position. Practically no danger of ruining door. No wood moldings. All steel. Rattle-proof. No vision, with 80% free area. Available with or without frame, all sizes. Gray or tan prime coated, or Hammertone finish in gray or bronze.

ACTUAL SIZE CROSS SECTION

Write For Our Complete

FREE CATALOG

Listing Over 1000 Types and Sizes of Grilles for Every Requirement

A-J MANUFACTURING CO.

Dept. A-10
3601 E. 18th St., Kansas City 27, Mo.

the editor's notebook

(continued)

Urges Steps to Combat Engineer Shortage

I AGREE with Dr. C. Richard Soderberg, engineering dean of Massachusetts Institute of Technology, who said recently that although some promising youths are denied a college education for lack of money, this is no longer a critical educational issue. "Rather," he explained, "the problems arise when the choice is made by the parents or when it is implied by social traditions." Dean Soderberg urged more recognition of creative work as a mark of success or prestige, although he admitted that in a free society "it will always be more profitable materially to buy and sell than to make things or conceive ideas." This issue, he pointed out, "is one we had better not ignore as long as we insist upon a society which requires highly trained engineers and scientists."

Clyde M. Barnes

EDITOR

NOW 4 ALL NEW

Luxaire® GAS FIRED

HORIZONTAL FURNACES

Approved for Natural, Manufactured, Mixed or L. P. Gas

AMERICAN GAS ASSOCIATION — TESTED AND APPROVED — COMPLIES WITH NATIONAL SAFETY REQUIREMENTS

make BIGGER use of smallest spaces!

LOW AND COMPACT

The 100,000 B.T.U. unit is but 58" long, 21" wide, 21" high . . . 140,000 B.T.U. unit is only 60" long, 27" wide, 24" high.

BURNER AND DRAFT HOOD INSTALL AT EITHER THE FRONT OR BACK

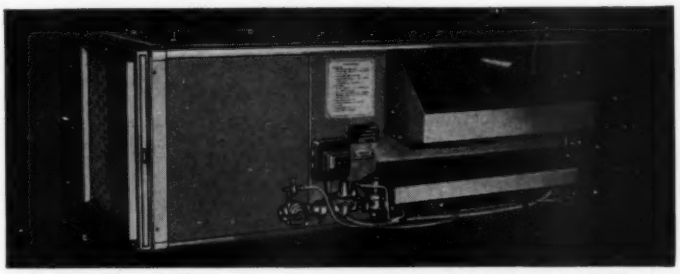
When burner is installed at front, flue pipe can be taken off from back. Or, burner can be transferred to back and flue pipe extended from front. Or, both burner and draft hood can be moved from front to back . . . and from right to left end of furnace.

VENT PIPE CAN BE EXTENDED HORIZONTALLY OR VERTICALLY

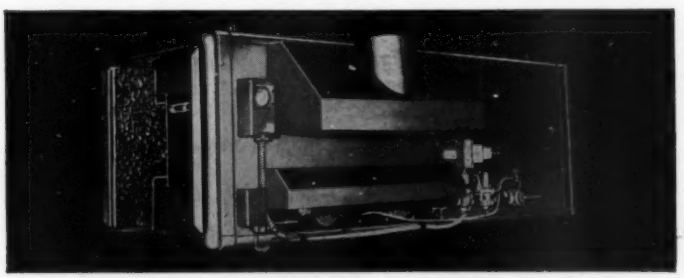
Flue vent pipe can be adjusted to either a horizontal or vertical position . . . can be taken off at most desirable angle.

THE 4 MOST WANTED SIZES

No. Y-80-E . . . . 80,000 B.T.U. Input
No. Y-100-E . . . 100,000 B.T.U. Input
No. Y-120-E . . . 120,000 B.T.U. Input
No. Y-140-E . . . 140,000 B.T.U. Input



Gas Horizontal Furnace shown above, as normally shipped assembled . . . with gas burner at front and right end, flue vent collar horizontal.



Unit shown with burner installed at left end and flue collar is adjusted to vertical position.

More than Competitive In Price!

NOW! An entirely new, complete line of Gas Horizontal Furnaces is added to the complete Luxaire line!

These Gas Horizontal Furnaces are completely new in design — design that will mean better profits for you from easier, speedier and more convenient horizontal installations. The unique, new installation features of these units make BIGGER use of smallest spaces!

No expense has been spared in securing new tools and equipment to manufacture the improved, all-steel heat exchangers and slot-type gas burners that make possible the exceptional compactness of Luxaire Gas Horizontal Furnaces.

You will also realize the benefits of these new manufacturing facilities in the form of prices that are more than competitive with those for even less advanced horizontal furnaces.

Getting your increased share of the ever-expanding market for gas horizontal installations requires only a call to your Luxaire jobber — today!

THE Luxaire® C. A. OLSEN MANUFACTURING COMPANY • • ELYRIA, OHIO

HEATING & AIR CONDITIONING UNITS

New Honeywell Warm Air Zone Control System

EASY TO INSTALL

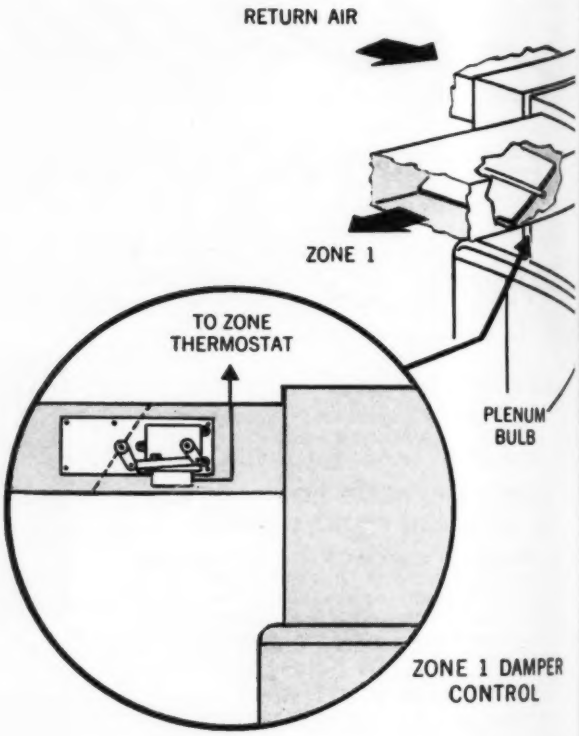
You can mount damper and new actuator in five simple steps

The diagram at the right shows a typical installation for a home divided into two comfort zones, each controlled by its own thermostat. And below you can see how easy it is to install the key to the system—the new M829 *modulating* motor and its damper—in five simple steps!

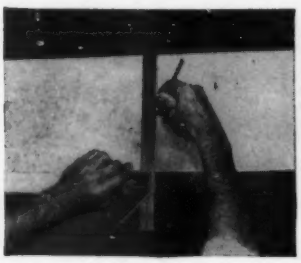
The *modulating* motor actuates the damper—adjusts it to the position that lets a *measured* amount of heat through the duct. Each motor is controlled by the thermostat in its corresponding zone.

The new damper actuator is noiseless and has no gears or pumps to get out of order. It can be mounted in any position, and all wiring is done on its outside.

The burner is operated by the T835 outdoor reset control which varies the furnace temperature as the outside temperature changes to provide a constant supply of warm air.

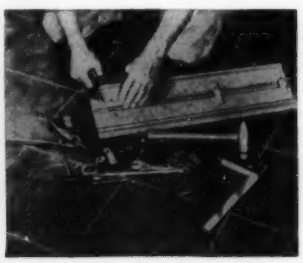


***Here are the five easy steps** to install the new Honeywell actuator-damper package including the new D522A damper, M829 modulating damper actuator and the Q401A motor bracket.*



Step 1—Determine where the damper is to be mounted and measure for the front and rear bearings. Honeywell Zone Control damper kit contains all necessary installation parts.

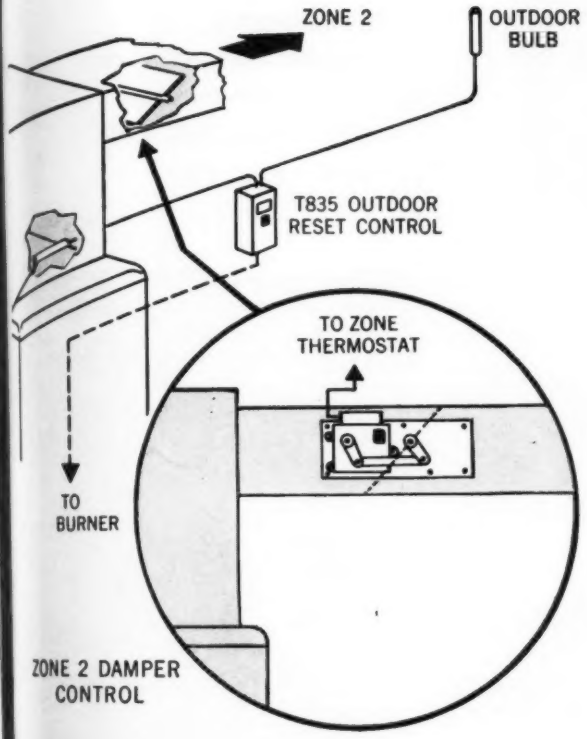
Step 2—Cardboard templates are provided in kit. By using a template and locating it under the previously scribed bearing location, the damper slot can be easily cut out.

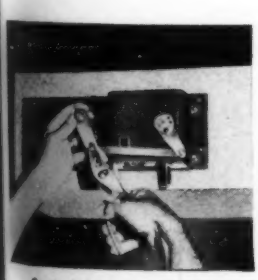


Step 3—The damper provided in the kit is a universal damper which can be cut to fit any duct. After measuring the width of the duct, cut the damper to the length which is desired.

Step 4—Drive the pointed damper shaft through the far side of the duct and insert damper. The mounting plate on the cut-away side is then easily fastened to the duct.

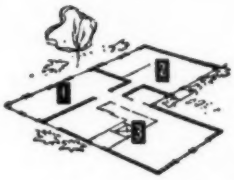
EASIER TO SELL





Step 5—Mount the actuator and connect the linkage to the damper shaft. The simple, low-voltage wiring is then run to the thermostat and the installation is complete.

Zoning with new damper actuator gives your customers "whole-house" comfort



Honeywell Zone Control, the modern method of heating that gives different areas of a home the different amounts of heat they require to be comfortable, makes sense to your customers. And now it will make even more sense with the new *modulating* damper actuator that "*measures*" out the exact amount of heat called for by each thermostat.

No other system gets as much comfort and efficiency out of a heating unit. You'll be way ahead in customer satisfaction as well as in profit from a more complete heating job.

For complete information on the new Honeywell Warm Air Zone Control System, or details on wet heat zoning equipment, call your local Honeywell office. Or write Honeywell, Dept. AA-10-145, Minneapolis 8, Minn.

M829 modulating damper actuator

T835A outdoor reset control

Your choice of:

Moduflow

Clock Thermostat

Honeywell Round

MINNEAPOLIS
Honeywell

Zone Control

112 offices across the nation

GALVANIZED

Blanks and strips sheared accurately to size

• SHEARING

TAKES MEN AND MACHINES.
THE MEN — AVERAGING FIFTEEN YEARS EXPERIENCE TAKE PRIDE IN GOOD WORKMANSHIP.
THE MACHINES — NEW, HEAVY-DUTY EQUIPMENT IN TOP CONDITION.
STRIPS AND BLANKS COME TO YOU AS YOU WANT THEM.

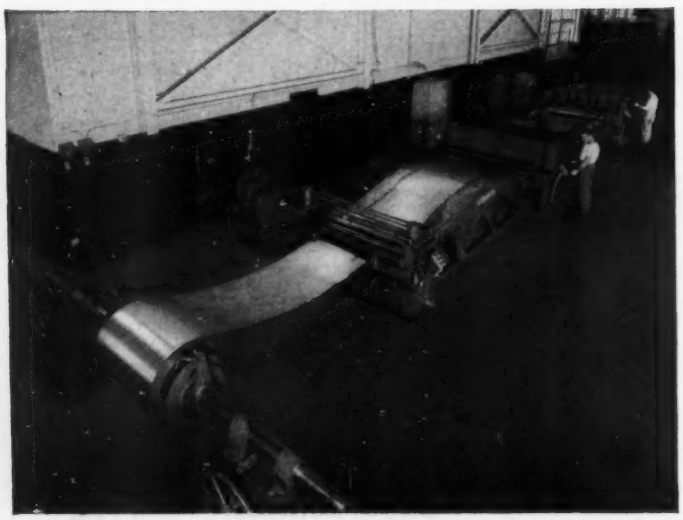
• CORRUGATED ROOFING AND SIDING

STANDARD OR SPECIAL SIZES CORRUGATED TO ORDER WITH EITHER 1¼" OR 2½" CORRUGATIONS.

• CUT-TO-LENGTH

OUR LARGE GALVANIZED COIL STOCKS ENABLE US TO QUICKLY PRODUCE FLAT SHEETS TO YOUR MEASURE.

1¼" and 2½" corrugations



Cut to your length and flattened

• QUICK DELIVERY

OVERNIGHT — TO YOUR DOOR — SECURELY PACKAGED — ON TIME — WHAT YOU WANT WHEN YOU WANT IT.

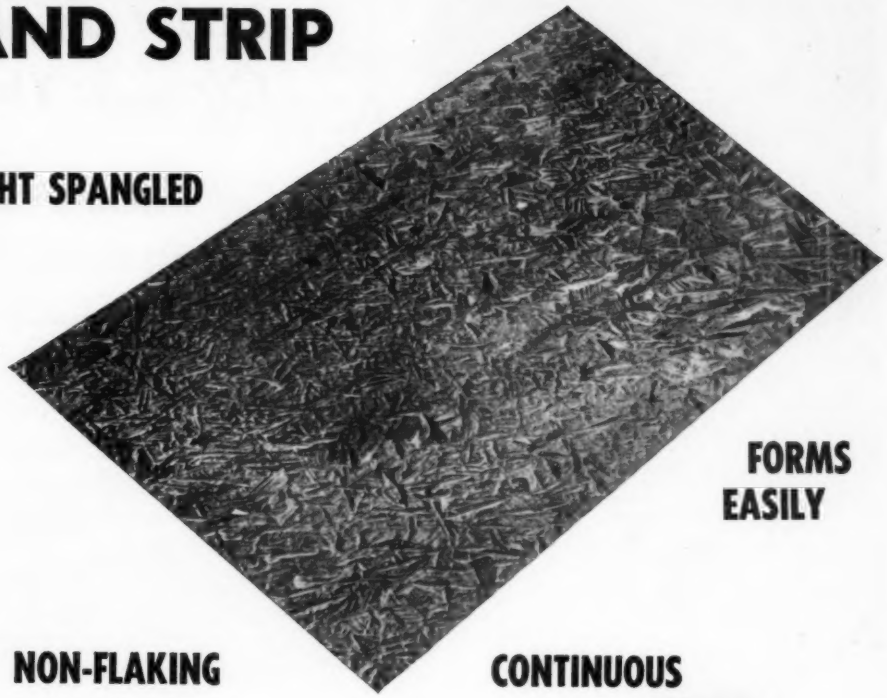
• PRINCIPAL PRODUCTS:

GALVANNEALED SHEETS, LONG TERNE SHEETS, COLD ROLLED SHEETS, COLD ROLLED STRIP, HOT ROLLED AND HOT ROLLED PICKLED SHEETS AND STRIP.

STEEL SHEETS AND STRIP

BRIGHT SPANGLED

TITE-COATED



FORMS EASILY

NON-FLAKING

CONTINUOUS ROLLED

DEPENDABLE QUALITY FROM

GREAT WESTERN STEEL COMPANY

ESTABLISHED 1918

Large Stocks — Standard and Manufacturers Sizes

CHICAGO
GENERAL OFFICES & WAREHOUSE
2300 W. 58th STREET
HEmlock 4-5800

MILWAUKEE DIVISION
2475 W. HAMPTON AVE.
HIlltop 4-3092

REPRESENTATIVES IN PRINCIPAL MIDWESTERN CITIES

Insist on the New *Classic* Thermostat...

Get Accurate Heating Control
Attractive, Modern Styling
Easy, Inexpensive Installation

***Install* DETROIT CONTROLS'**

***New Classic* Thermostat**

for Customer Satisfaction!

The Classic will add style and saleability to the heating systems you manufacture, sell or install.

Its smart, modern design will complement the decoration of any home, new or old. The single, large numbered dial is slanted for perfect vision—can be read at a glance! The temperature selector is directly under the indicator needle—eliminates fumbling with old-fashioned turning or twisting devices.

Installation is very simple. No precision levelling is necessary. The Classic requires only two wires—easily replaces any two or three wire thermostat of earlier design.

Close control of any type heating, within a *fraction of a degree*, is assured by Detroit Controls' Timed Cycling function.

National advertising in Better Homes & Gardens, Small Homes Guide, Home Modernizing and other magazines will bring broad consumer acceptance to the Thermostyled Classic.

Take Advantage of this opportunity...

SELL THE *Classic*

DETROIT CONTROLS
CORPORATION

5900 TRUMBULL AVE. • DETROIT 8, MICHIGAN
Division of AMERICAN RADIATOR & STANDARD SANITARY Corporation

Representatives in Principal Cities—Canadian Representatives:
RAILWAY AND ENGINEERING SPECIALTIES, LTD.,
Montreal, Toronto, Winnipeg

AUTOMATIC CONTROLS for DOMESTIC HEATING • AIR CONDITIONING • REFRIGERATION • AVIATION • TRANSPORTATION • HOME APPLIANCES • INDUSTRIAL USES

FHA Issues New Insulation Requirements

FHA COMMISSIONER Norman P. Mason has announced changes in FHA minimum property requirements which he said will help buyers to obtain more for their money in FHA-financed homes. The changes include a reduction from 60 to 55 Btu per sq ft of floor area in calculated hourly heat loss, the establishment of maximum heat loss coefficients for walls, ceilings, and floors, new requirements for perimeter insulation of floor slabs on ground, and a limitation on loose fill insulation.

Relaxations in minimum property requirements include the following: 1) Painting of unexposed portions of galvanized sheet metal used as flashing or roofing is no longer required. 2) Installation of gutters and downspouts is required only if soil and other conditions make them necessary. In many types of architectural design, particulary those using wide roof overhangs, gutters and downspouts are not needed, according to FHA.

Survey Reveals Growth In Home Ownership

THE 1955 SURVEY of Consumer Finances shows that one-third more nonfarm families owned their homes in early 1955 than in early 1948. The growth in home ownership reflects not only changes in family composition and in income status, but also the continuing availability of mortgage financing on generally favorable terms. The survey also shows growth in the proportion of owner-occupied houses that are mortgaged and in the average size of mortgage debt.

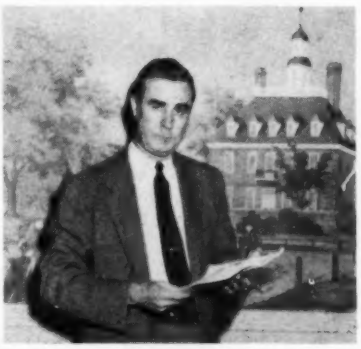
Increase in population and movement of people from one part of the country to another, combined with generally favorable economic conditions, have maintained high levels of demand for housing.

Dealer Program to Highlight NWAHACA 1955 Convention

IN A RECENT interview with G. W. Denges, president, National Warm Air Heating and Air Conditioning Association, we learned about the latest plans for the 42nd Annual Convention scheduled for November 30 and December 1, Hotel Statler, New York City. Mr. Denges said that every effort is being made to have a program that will provide plenty of information to every segment of the industry.

It is the first meeting to be held on the East Coast for a number of years and the association's president extends a special invitation to dealers in that area to attend the convention as one of the highlights scheduled is a seminar of vital importance to dealers interested in *Effective Functions of Local Associations.* Two members of the dealer panel are Robert P. Johnsen, president, Atomatic, Inc., Chicago, and Martin Schaar, president, Wisconsin Furnace Co., Milwaukee. Several other dealers have been invited to participate by moderator R. V. Main, Viking Air Conditioning division, National-U.S. Radiator Corp., Cleveland.

The National Heating and Air Conditioning Wholesalers are holding their annual convention November 27 to 29 at Hotel Governor Clinton (1 block away) and many wholesalers attending this meeting have planned to stay over to take advantage of the NWAHACA convention program which includes information that should enable the dealer, wholesaler and manufacturer to work more as a team to achieve a greater volume of annual sales at better profits for all parties. President William H. Bowe of the NHAW association will address the convention on Wednesday, November 30, during the afternoon session. His subject, *It's Cooperation That Counts*, will deal with a dealer training program and how it can pay off to those participating.



G. W. DENGES, president of NWAHACA, extends a personal invitation to all to attend the 42nd annual convention in New York City

The operation of the service department so that it will pay annual dividends will be explained by R. F. Swett, Springfield, Mass. heating dealer.

Quality sales and how to obtain them will be outlined by H.C. Gurney, sales manager, Janitrol Heating & Air Conditioning division, Surface Combustion Corp.

Operating a small business will be discussed by H. E. Owens, Owens & Company, East St. Louis.

Prospects for both heating and cooling sales in the 1960's will be given by K. L. Wilson, manager, Heating Controls division, Minneapolis-Honeywell Regulator Co.

Non-residential heating, its growing potential and profits will be outlined by L. S. Redford, vice president, Jackson & Church Co.

A sales story by P. C. Kosch, sales manager, Bryant division of Carrier Corp., entitled *BB Through DDT* will add some lively comments to the usual day-by-day sales problem.

FHA and Higher Commitments for Better Installations will be detailed by C. A. Bowser, Assistant Commissioner, Technical Standards, Federal Housing Administration.

(*Continued on page 22*)

Chrysler
Airtemp

Back of Airtemp is Chrysler—

the greatest name in engineering!

and every Airtemp Dealer has the full support of a Distributor who is a specialist in air conditioning!

Airtemp residential air conditioning and heating distributors are hand-picked specialists. They provide help on all problems from merchandising to application to installation to service. Let us tell you all the facts about the big profit opportunity today. Write Department AA-10, Airtemp Division Chrysler Corporation, Dayton 1, Ohio.

Airtemp
DIVISION
CHRYSLER CORP

HEATING • AIR CONDITIONING FOR HOMES, BUSINESS, INDUSTRY

Low Cost BASO®

AUTOMATIC PILOT

FOR HOOK-UPS ON

...SPACE HEATERS

...GAS APPLIANCES

BASO No. 829
is easy to install...easy to service

If you're manufacturing *small* gas heaters or appliances, you'll like everything about this new member of the Baso Automatic Safety Pilot line. It costs you less to buy and saves you money in production. It provides 100% shut off of gas at a minimum expense.

The 829 Baso Valve is a straight through type for a simplified manifold design and has a rotor pilot valve which eliminates the need for a separate "B" valve and extra pilot line fittings. If the rotor pilot is not needed, Baso Valve No. 819 (without it) is available at even lower cost.

The ⅜" pipe size provides a capacity of 51,000 BTU per hour with manufactured gas; ½", ¼" or ⅛" sizes can also be furnished. The pilot gas outlet is a ¼" compression coupling. The valve body is cast aluminum alloy; internal parts, in contact with gas, are stainless steel and aluminum so that manufactured, natural, or liquefied petroleum gases can be used. Hood and reset assembles—typical of all Baso Automatic Safety Pilots—are replaceable in the field. Write for more information.

MILWAUKEE GAS SPECIALTY CO.
Dept. AA-4
MILWAUKEE 1, WISCONSIN

(Continued from page 19)

ASHAE Committee Begins Study of Noise in Air Conditioning Equipment

A NEW STUDY OF NOISE from air conditioning equipment and installations has been started by the Research Laboratory of the American Society of Heating and Air-Conditioning Engineers. The immediate objective of this project, according to Elmer R. Kaiser, ASHAE director of research, is the development of a basic method of sound measurement which can be adopted as a standard so that this noise control can be organized on an engineering basis.

The Technical Advisory Committee on sound and vibration control of ASHAE is under the chairmanship of Harold A. Lockhart. The committee has assembled and screened numerous technical suggestions in organizing the program. In addition to the measuring techniques, the program seeks to determine the attenuation of sound in ducts, and the regeneration of noise by turbulence in duct fittings and dampers. Also serving on the technical advisory committee are A. F. Hubbard, American Air Filter Co., Inc.; C. M. Ashley, Carrier Corp.; C. R. Hiers, Joy Mfg. Co.; R. D. Madison, Buffalo Forge Co.; G. C. Kerr, Johns-Manville Sales Corp.; and T. A. Walters, American Blower Corp.

NWAHACA to Report on Research Program

(*Continued from page* 19)

The association's research program will be described by F. L. Meyer, first vice president. Assisting with the report will be D. R. Bahnfleth, University of Illinois, with two papers on completed projects. These papers are entitled *Performance of Year-round Air Conditioning System When Used for Heating in Research Residence No.* 2 and *Pressure Losses in Perimeter Fittings and Diffusers.* J. R. Wright, University of Illinois, will present a paper on *Studies of Air Cooled Condensing and Night Air Cooling in Research Residence No.* 2. *Tri-level House Heating and Cooling* is the title of the paper to be presented by C. W. Nessell, account executive, Minneapolis-Honeywell Regulator Co.

L. C. Whealy, president, National Warm Air Heating & Air Conditioning Association of Canada, will be the guest speaker for the Canadian chapter.

Luncheon speakers are Arthur H. (Red) Motley, president, Parade Publications, Inc. on Wednesday, November 30, and W. Wadsworth Wood, publisher, Small Homes Guide & Home Modernizing, on Thursday.

Wholesalers Study Sales Techniques

AN INTENSIVE leadership training program designed to help increase creative sales throughout the heating and air conditioning industry by teaching its top salesmen "how to sell" was held recently in Minneapolis. Twenty-three owners, sales managers and other officials of supply firms attended the five-day program which was presented by Minneapolis-Honeywell Regulator Co. for the National Heating and Air Conditioning Wholesalers Association. Specially tailored for the heating and air conditioning industry, it covered 25 weekly sales training sessions each designed to provide key personnel in individual heating-air conditioning wholesale firms with information and materials they could use in organizing and conducting similar training programs in their own companies, after which the newly trained men will apply the techniques to aiding dealers with their sales.

Sale of Heating Firm OK'd by Stockholders

STOCKHOLDERS of the C. A. Olsen Mfg. Co. have approved the sale of their company to Westinghouse Electric Corp. Clarence A. Olsen, president of the Olsen firm, has been named president of the new Westinghouse subsidiary, which will continue to be known as the C. A. Olsen Mfg. Co. The Olsen trade names of "Luxaire" and "Moncrief" will also be continued.

Buffalo Amends Heating Ordinance

THE CITY OF BUFFALO has amended its ordinances to require permits for the installation of fuel and refuse burning equipment in one and two family residences and to provide for the inspection of such equipment by city authorities. Equipment already installed is also subject to inspection to determine if its operation is in compliance with the provisions of the law.

NAHB Plans Larger Convention-Exposition

PLANS for a major expansion of its annual convention and exposition, to be held in Chicago January 22-26, have been announced by the National Association of Home Builders. The Chicago Coliseum will add some 200 extra exhibit spaces and a meeting hall accommodating 2500 persons to the show's facilities, according to Paul S. Van Auken, convention-exposition director. As in the past, the show will also occupy all available meeting rooms and exhibit space in the Conrad Hilton and Sherman hotels. The expansion will make it possible to provide display space for a greatly increased number of exhibitors, including manufacturers of heating and residential air conditioning equipment.

SAVES 50% ON CLEAN AIR MAINTENANCE COSTS!

THE FIRST **TOTALLY NEW** FILTER DEVELOPMENT . . . IN 25 YEARS

*This is not an idle claim . . . it's a fact . . . PROVEN UNDER ACTUAL INSTALLATION AND MAINTENANCE CONDITIONS.

Make no mistake about it . . . no matter how small your filter requirements . . . or how large, here is a completely new air filter development that can absolutely cut your clean air maintenance costs in half.

NO HEAVY TENSION OIL — Evans filters do not have a messy, sticky type of adhesive that is filthy to handle and difficult to clean. It is unnecessary and is forbidden in the use of Evans filters.

CLEAN WITH TAP WATER — Evans filters can be cleaned clean in minutes with nothing ever but tap water sprayed through an ordinary garden hose nozzle. They require no expensive fireproof room. No caustic cleaning solutions or agents. This eliminates all danger in the cleaning of Evans filters.

LIGHT WEIGHT CUT LABOR COSTS — Evans filters are all aluminum. Light to handle, to carry, to pick up. In spite of airtight fitting frames, Evans filters pull quickly and easily in and out of the frames. Take much less effort, less labor to handle. No latches . . . or lugs required.

REMEMBER: Initial costs for air cleaning equipment are not the big factors or controlling factors in the cost for clean air.

IT'S OPERATING COSTS THAT YOU MUST LIVE WITH AND THAT YOU MUST CONTROL.

EVANS FILTERS GIVE YOU THAT CONTROL. MAKE IT POSSIBLE FOR YOU TO SAVE 50% ON CLEAN AIR MAINTENANCE COSTS.

- ALL ALUMINUM
- EVERY PART PRECISION MADE
- HOLD UP TO 200% MORE DUST AND LINT WITHOUT HARMFUL RESTRICTION TO AIRFLOW
- GIVES LIFETIME SERVICE

FREE CATALOG

MAIL COUPON TODAY

THE GEORGE EVANS CORPORATION · MOLINE, ILLINOIS

Gentlemen: I wish to know how to cut my clean air maintenance costs in half with a filter that gives lifetime service. Please send me new illustrated catalog.

Name .....

Company .....

Address .....

City ..... State .....

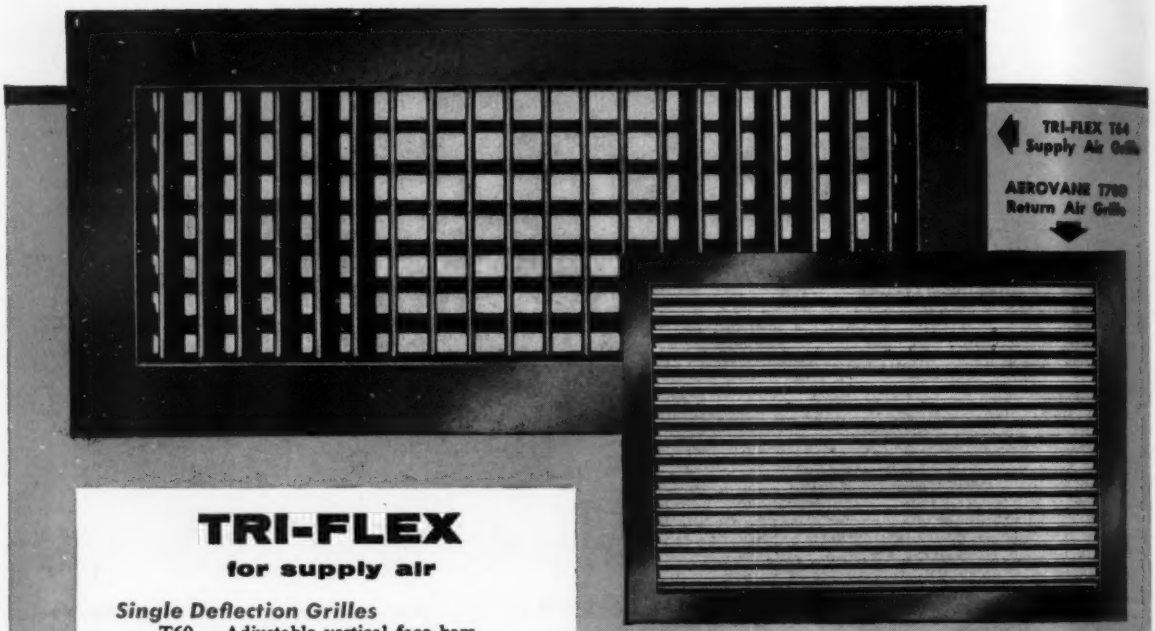
Evans

Lifelong AIR FILTERS

Install T&B Grilles and Registers

for Economy . . . Easy Selection . . . Simplified Installation

A TYPE AND SIZE TO MEET THE SPECIFIC NEEDS OF EVERY JOB!



TRI-FLEX

for supply air

Single Deflection Grilles

T60 — Adjustable vertical face bars
T50 — Adjustable horizontal face bars

Double Deflection Grilles

T64 — Adjustable vertical face bars and horizontal rear bars
T55 — Adjustable horizontal face bars and vertical rear bars

Single Deflection Registers

T67 — Adjustable vertical face bars and vertical blades
T57 — Adjustable horizontal face bars and vertical blades

Double Deflection Registers

T647 — Adjustable vertical face bars, horizontal rear bars and vertical blades
T557 — Adjustable horizontal face bars, vertical rear bars and vertical blades

AEROVANE

for return air

Return Air Grilles

T70D — Horizontal bars set at 35° angle
T80 — Vertical bars set straight

Return Air Registers

T78 — Horizontal face bars and adjustable horizontal blades
T88 — Vertical face bars and adjustable horizontal blades

WRITE FOR CATALOG NO. 200 . . . complete description, dimensional information, and size selection data for T&B Grilles, Registers, and Air Control Devices.

TUTTLE & BAILEY INC
NEW BRITAIN, CONNECTICUT

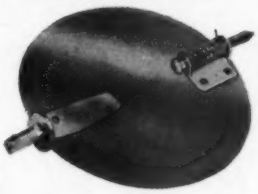
ENGINEERED PRODUCTS FOR AIR CONDITIONING, VENTILATING AND HEATING

When you've got to figure tight

DURO-DYNE

—You can save money on round balancing dampers with the Sensational *New*

Jiffy Damper



JDS Series—With Spring-Loc

JD Series—No Spring-Loc

DURO-DYNE

Complete, prefabricated, inexpensive dampers ready for immediate installation in ductwork. A comparable damper made in the shop costs considerably more. The Jiffy Damper consists of the famous **PARKER-KALON** Jiffy Regulator (now made by Duro-Dyne) preattached to a galvanized iron blade. Steel threaded bearing can't break. No loose parts to rattle.

Two styles are available: JDS Series has patented Spring-Loc for keeping damper in perfect position under high air velocities. JD Series—same as JDS but without Spring-Loc. For Six Duct Sizes: 4", 5", 6", 7", 8", 9"; Special sizes and shapes also available.

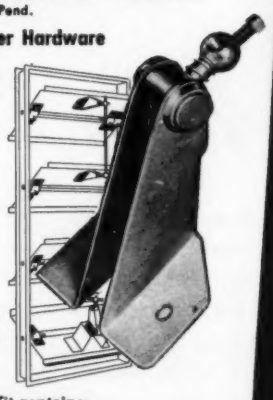
—You can use unskilled labor to make absolutely non-binding louver dampers with the

NEVA BIND T.M.

Duro-Blade Kit

Pat. Pend.

Precision-Engineered Damper Hardware



Permits smoothly operating, non-binding louver dampers to be assembled with little care and no alignment afterward. The Neva Bind Duro-Blade Kit's unique 4-way adjustability automatically compensates for inaccuracies in damper construction, thereby preventing undue stress or bending of the connecting rod, the main cause of damper binding. Neva Bind Duro-Blade Kits cost no more than old type kits.

Each Neva Bind Duro-Blade Kit contains: 1 Neva Bind Duro-Bracket, 1 pair self-oiling Duro-Bushings; 1 pair Duro-Bearings.

DURO-DYNE

—You can make flexible connectors up to 3 times faster with Duro-Dyne's

Complete line of flexible Connector Materials

Duro-Metal-Fab: Preassembled metal-to-fabric-to-metal. *Saves expense of attaching metal to fabric.* Exclusive Double-Loc Seam prevents fabric pulling out while braking, or being cut when connector vibrates on the job.

Generous metal dimensions 3" and 4" full usable, fabric dimension over 3" exposed. Metal is 24- or 26-gauge galvanized iron. Choice of fabrics includes U. L.-Approved Canvas, Asbestos or Neoprened Fiberglas. Packed 50 ft. or 100 ft. to handy Dispenso-Flat carton.

Econ-O-Fab: Considerably lower price, but same quality and construction as Duro-Metal-Fab. Lighter metal and fabric for residential work and lighter gauge ductwork. Same generous metal and fabric dimensions. Includes Double-Loc Seam. Same choice of fabrics. Packed 50 ft. or 100 ft. to handy Dispenso-Flat carton.

Duct Fabric: Quality fabrics without metal. For special jobs where contractor must fabricate connectors from fabric and metal cut to size. Following fabrics are supplied in 100 ft. rolls packed in handy dispenser cartons: Canvas, U. L.-Approved—6" or 10" widths. Asbestos, Heavy Grade—6" width. Neoprened Fiberglas—6" width.

Write us for literature or see your distributor

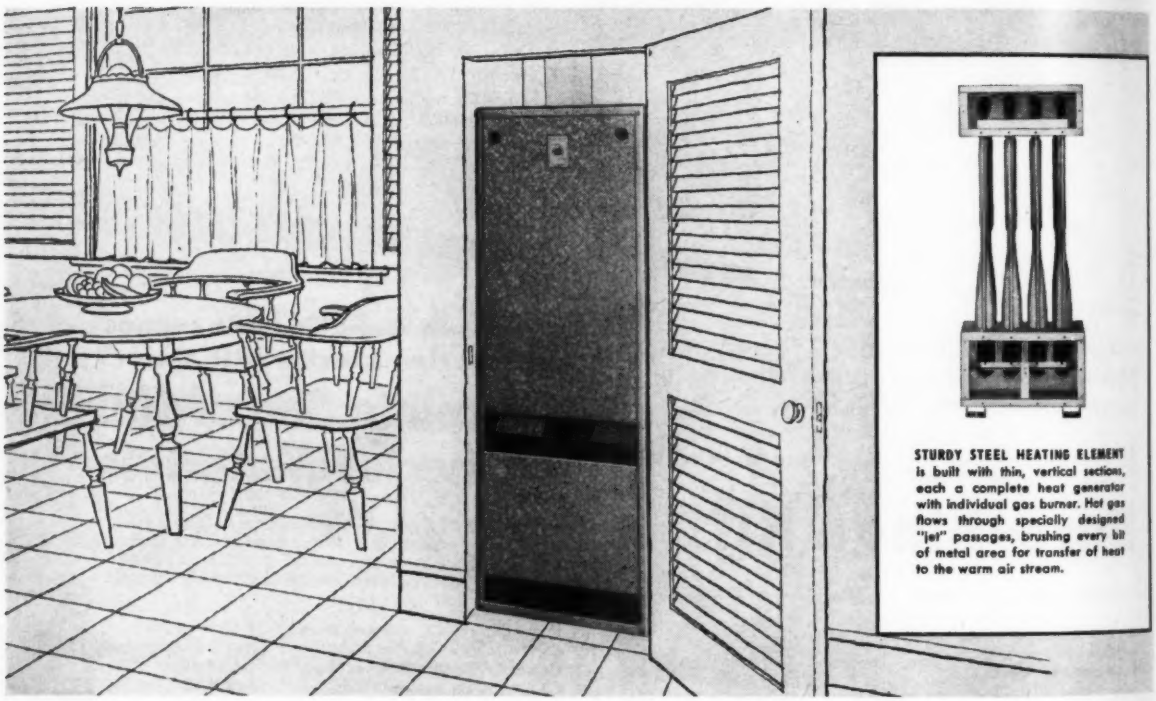
Duro-Dyne Corporation

800-B THIRD AVENUE, NEW HYDE PARK, N. Y.

AMERICAN-Standard

AIR CONDITIONING DIVISION PRESENTS

A NEW, MORE COMPACT GAS-FIRED COUNTERFLOW HEATING UNIT



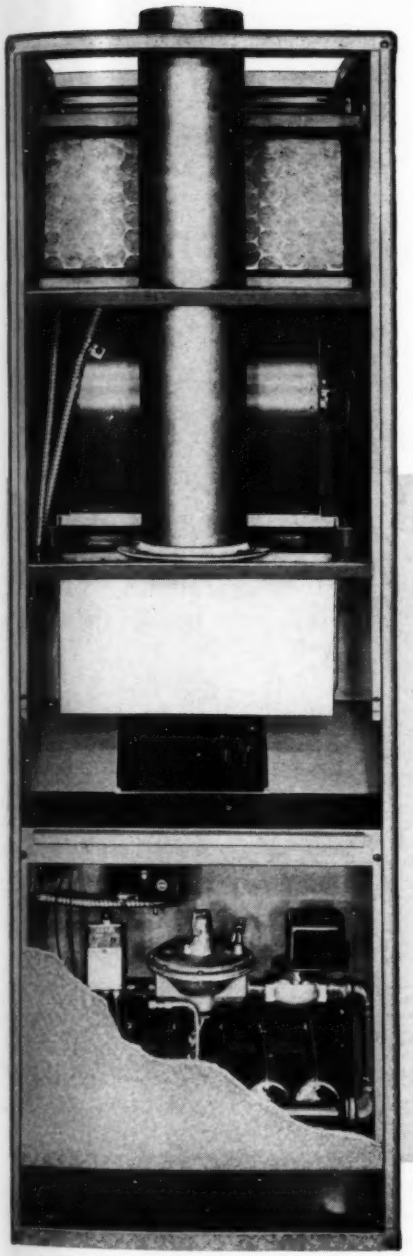
STURDY STEEL HEATING ELEMENT is built with thin, vertical sections, each a complete heat generator with individual gas burner. Hot gas flows through specially designed "jet" passages, brushing every bit of metal area for transfer of heat to the warm air stream.

Competitive price! Smaller size! Bigger value! Model GCA—an all-new design—gives you an overwhelming sales advantage on new and replacement jobs where the heating layout calls for a counterflow model winter air conditioner.

It's specifically designed, through and through, for gas firing—therefore operates at higher efficiency and lower fuel cost. It's a marvel of compactness that appeals strongly to the builder and home owner alike.

Installation is quick, easy, trouble-free with this completely factory assembled, wired and *Installation Tested* unit. It can be placed in small closet or alcove with 1-inch clearance at sides, zero clearance at rear. If optional sub-base is used, the unit can be safely installed on combustible flooring. Four models are available—see list on right hand page—each with powerful, whisper-quiet blower and dependable, automatic controls. The jacket finish is handsome, durable Forge Red.

FOR FULL DETAILS, CONTACT YOUR AMERICAN-STANDARD WARM AIR HEATING AND AIR CONDITIONING DISTRIBUTOR



MODEL GCA

Completely factory assembled and wired

APPROVED BY A.G.A.

INSTALLATION TESTED*

1. Heating elements tested under air pressure.
2. Gas manifolds tested under air pressure.
3. Automatic pilot valves and quiet-action gas valves tested in operation.
4. *Installation Tested. The fully assembled unit is tested at the factory just as if it were finally installed. Procedure includes actual gas firing and operation of the blower and controls.

MODEL NO.	Btuh INPUT	Dimensions (inches)		
		HEIGHT	WIDTH	DEPTH
**GCA-75-D	75,000	66	16⅛	28⅛
**GCA-100-D	100,000	66	18⅝	28⅛
GCA-100	100,000	66	18⅝	28⅛
GCA-125	125,000	66	22⅝	28⅛

**Equipped with direct drive blower

EVERYTHING *for air conditioned comfort*

Warm Air Heating
Summer Cooling
Year 'round Units
Electrostatic Air Filters

American-Standard
AIR HEATING
AIR COOLING
AIR CONDITIONING DIVISION

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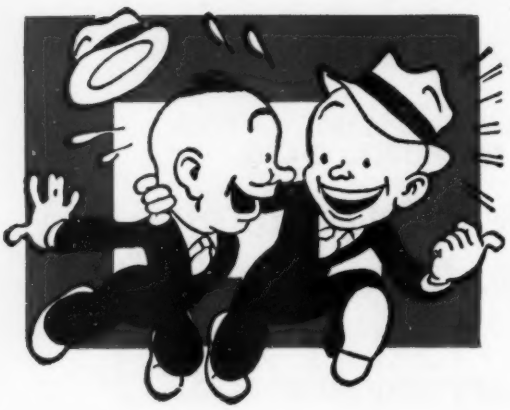
AIR CONDITIONING DIVISION

ELYRIA, OHIO

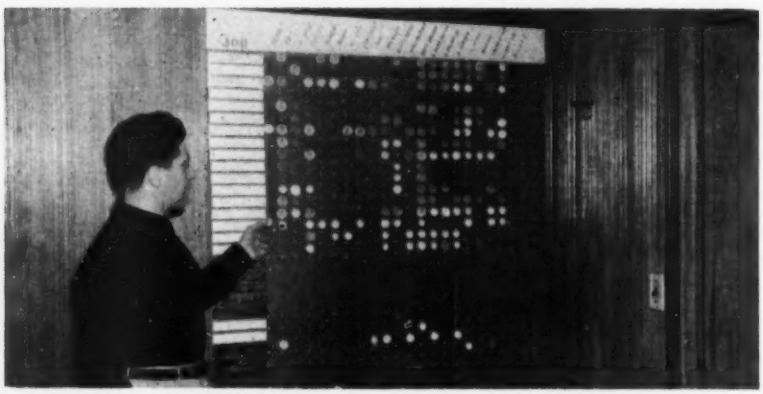
American Radiator & Standard Sanitary Corporation



Idea Exchange for Dealers and Contractors

Progress Board Tells Job Status at a Glance

A highly successful management tool maintains an even flow of work



ALVIN MINTZ EXPLAINS features of progress board that helps to keep each job moving both in the shop and on the job

THE PROBLEM of keeping track of all of the details in starting and completing each job is one faced by all dealer-contractors. Each, in his own way, has solved the problem sufficiently to meet the requirements of his own operation. One air conditioning dealer, Alvin Mintz, Cleveland, Ohio, has worked out a system that tells him at a glance the status of each job. He knows if the permits have been obtained, if the duct work has been fabricated by the shop, if all equipment is in stock and assigned to the job, if mechanics have been routed to make the installation and, most important of all, if the job has been completed, that the bill has been sent.

The progress board used by Mr. Mintz is 48 in. wide, 53 in. high and is made of ¼ in. plywood.

This business tool is illustrated in the accompanying photograph but its success in the shops will depend upon the way the idea is adapted by dealer-contractors to their own operation. Mr. Mintz has listed 21 headings (spaced 1¾ in. apart) across the top of the board in the following order: 1) Permit; 2) Unit; 3) Water Valve; 4) Furnace; 5) Tower; 6) Pump; 7) Filters; 8) Controls; 9) Fans; 10) Grilles; 11) Diffusers; 12) Specialties; 13) Duct Design; 14) Duct Fabrication; 15) Duct Rough-in; 16) Duct Finished; 17) Piping; 18) Wiring; 19) Insulation; 20) Start-up; 21) Billed. Each heading is slanted to make it more easily read.

Down the left side is a column of metal identification receptacles. These receptacles are 7 in. long and 1½ in. high, and have ¼ in. rolled edges, top, bottom and right end. The left end is left open for inserting labels that identify each job. Each label contains information about the job, the customer's name, address, type of job, job number and promised date.

Lines are drawn horizontally from the top edge of each identification receptacle. On these lines are fastened cup hooks 1¾ in. apart; thus, under each of the 21 headings is a cup hook. Metal rimmed paper tags, 1½ in. in diameter, are hung on the cup hooks as each new job is placed on the board.

Five different colored tags are used to indicate the progress of each of the headings as they apply to each job. These colors and their meanings are:

White — Required
Red — Ordered
Yellow — Delivered
Blue — In Progress
Green — Completed

Each day the progress board is brought up to date by the office manager who is responsible for purchases, orders, routing, etc.

Install it . . . and forget it

New AIR CONTROL

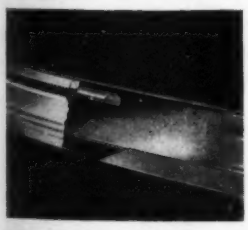
baseboard PERIMETER DIFFUSER

NEW ROTARY DAMPER INSURES UNIFORM AIR VELOCITY THROUGHOUT THE DIFFUSER AT ANY SETTING—AND ONLY AIR CONTROL HAS IT . . .

Here's the only diffuser of its kind — the new Air Control No. 188 Diffuser with built-in rotary damper. It assures peak efficiency in air patterns for heating and cooling — saves many call-backs that cut your profits.

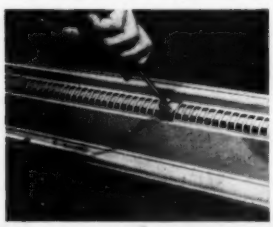
A simple set-screw balances this damper perfectly. From then on it maintains a uniform air pattern, regardless of the setting or the volume of air. And it's so *quiet* — no whistling or rattling.

The Air Control No. 188 has 29.36 sq. in. free area to allow maximum air flow in heating and cooling — the smart styling your customers prefer — and unique design features that save you half the usual time and work at installation. Yes, it's a real moneymaker for you in every way. Your jobber can supply you this outstanding new diffuser now in 2- and 4-ft. lengths. Get in touch with him — today!

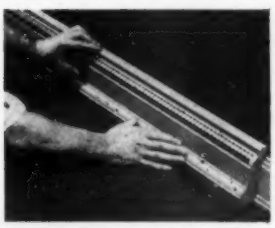


NEW ROTARY DAMPER The only damper that assures a constant velocity across the face of the diffuser at any degree of opening. No whistling or other noises. And note that it's attached to the face — no separate installation is necessary. Another exclusive development of Air-Control's pace-setting engineering.

ADJUSTO BOTTOM-BASE STRIP Cuts installation time in half with one bite of the snips! It's easy to locate the duct at any point along the No. 188 . . . even at the end. Simply pull out the base strip, cut it off, and slide the cut-off into the other end of the diffuser. That's all there is to it!



QUICK, POSITIVE DAMPER BALANCING One man can balance the new No. 188 Diffuser — precisely and surely. By adjusting the set screw lock on the operator, the damper can be made to stop at any desired position, yet does not prevent it from closing. A simple twist of a screwdriver does it all.



COST-CUTTING INSTALLATION You can install the No. 188 either before or after plastering — it's that easy to handle and adjust. The face is the new, convenient slide-on type — easy to remove to speed up installation, easy to replace to make an installation that gives you minimum trouble and maximum profit.

WRITE DEPT. A FOR BULLETIN 146 AC GIVING COMPREHENSIVE DETAILS ON THE NO. 188 PERIMETER DIFFUSER.

AIR CONTROL PRODUCTS, INC.
COOPERSVILLE, MICHIGAN

NO. 333 RETURN AIR GRILLES . . .

The perfect partner to the No. 188 or any other diffuser. Available in 13 sizes from 10 x 10 to 30 x 18. Just one return in the larger sizes has enough capacity for an entire heating or cooling system. Strong, easy to install, low-cost.

AIR CONTROL

The complete line of diffusers and grilles for all heating and cooling requirements.

PACE SETTER IN PROGRESS, PERFORMANCE, PROFITS

Air Conditioning's #1 Problem...

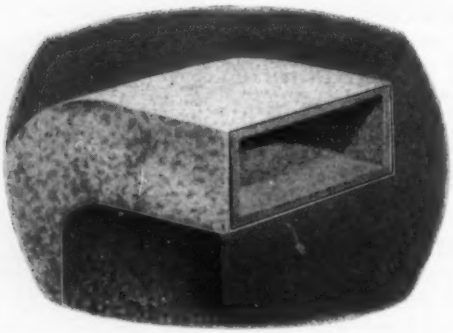
how to move air without "FAN-FARE"

Recent studies show that noise control is one of the prime problems of air conditioning today. Time and again, homeowners and businessmen complain that "fan chatter" and other objectionable noises seriously interfere with their rest and work.

The best possible way to keep your comfort-cooling customers from getting hot under the collar about noise is to install a few feet of ULTRALITE* Duct Liner in the plenum and short supply and return ducts. It's easy . . . it's inexpensive . . . it's effective — yet this simple precaution can make all the difference between a satisfactory and an unacceptable air conditioning job.

That's why it is good practice today for architects and engineers to specify ULTRALITE glass fiber duct liner on every job. That's why contractors who want nothing but satisfied customers line ducts even on jobs where duct liner is not specified.

*Reg. U. S. Pat. Off.

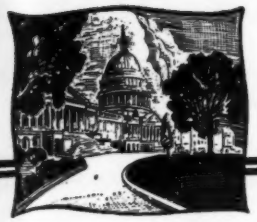


ULTRALITE is a flexible, semi-rigid glass fiber insulation designed specifically as an acoustical duct liner, with excellent sound-absorbing properties. Because of its unique long textile-type glass fiber composition, ULTRALITE is the strongest, most resilient glass fiber insulation. That's why it will not break, chip, delaminate or flake off in the air stream. ULTRALITE is available coated one side to minimize air friction loss. Local stocks in 57 cities are maintained to give you delivery when and where you need it. Your nearby distributor is listed in the Yellow Pages under "Gustin-Bacon Insulations."

GUSTIN-BACON *Manufacturing Company* GUSTIN gb BACON

Thermal and acoustical glass fiber insulations • Pipe coverings and fittings • Railroad gaskets and supplies

226 W. 10th St., Kansas City, Mo.



Washington Letter

Government Tightens Reins on Credit

By Arnold Kruckman

Indications point to a slight check on the availability of credit as a precautionary measure against inflation. There are experts too, who say the high consumer credit figures aren't as alarming as they might seem

The Federal Reserve Board and other financial agencies of the federal government have been moved to put mild restraint on the money market as it affected the mortgage and credit policies of the government on housing operations. Jointly the Treasury, the Federal Housing Administration, the Veterans Administration, the Office of Defense Mobilization and the Department of Commerce, reflecting the Federal Reserve board's quiet conferences with various groups that affect consumer credit, passed along the word to tighten the controls on credit. They threw out all no down payment mortgage loans for GI's and they wiped out all future 30 year mortgages (longest mortgage terms available will now be for 25 years). The agencies which made the changes very frankly said that the action was taken as an anti-inflationary measure.

Increases Are Small

For non-GI homes, the Federal Housing Administration raised the down payment requirements by 2 percent. FHA terms call for a sliding scale of down payments, each category of which will be raised by 2 percent. For GI homes, the Veterans Administration imposed a flat 2 percent down payment. The VA up to now has never required that a cash payment be made.

The change, according to government officials, will increase the buyers' monthly payment by about 49 cents a month on each $1000 of the mortgage.

Housing Administrator Albert M. Cole and FHA Commissioner Norman Mason term the deflationary step "a mild and temporary precautionary measure which seeks to assure that the housing market will not contribute inflationary pressures in the economy." Some insiders feel that the measures adopted are preliminary to other measures designed to sidestep a runaway ballooning inflation.

All this, of course, will make some difference to those who undertake to supply equipment and appliances and the materials that go into the building of a house, who depend upon the loans they negotiate for their customer in order to finance the house. Naturally, the monthly payments also have increased.

When the action was ordered, Mobilization Director Flemming was of the opinion that it would immediately halt incentive tax benefits to more than 50 industrial concerns. Secretary of Commerce Weeks warned business and others to "keep their feet on the ground and employ simple common sense," and warned against "exaggerated market speculation and expansion of dangerous credit inducements." Mr. Weeks pointed out that the gross national product — the estimated value of goods and services in this country— was $385 billion for the second quarter of 1955. This was a new high record. For the first quarter it was $375 billion; last year it was about $383 billion.

The Secretary previously announced that employment in July totaled just under 65 million as compared with a previous high of 63,691,000 in August, 1953. Personal income was at an annual rate of $301 billion in May and June, 1955, compared with $288 billion in July and October, 1953.

Overconfidence Is Dangerous

Mr. Weeks emphasized "overconfidence can be as hurtful as lack of confidence, and speculation can be worse. Businessmen have to watch their inventories. Construction, housing and plant, must be related to legitimate demand.

"We must realize that exaggerated market speculation can induce a headache instead of a healthy economy, although high quality of credit is vital at all times," Mr. Weeks said.

One of the most sensible explanations for the fact that people still have more savings than the total of their commitments for consumer credit is not merely the fact that they are getting better pay and are more widely employed, but that there are many expenses which they had to meet in the past themselves which now either are met for them or partially defrayed by their employers or by government or other sources. They

WASHINGTON LETTER—

(Continued from page 31)

point out that practically every important fixed expense such as health, old age, and other insurance, and the many other demands the individual had to meet out of a much smaller pay envelope 25 or 30 years ago are now wholly or partly defrayed by other sources. Thus, the average individual has considerably more money to spend and can make consumer credit commitments with satisfaction to himself and with reasonable safety to the business community and the financial institutions which are concerned in his destiny. For this reason at least a third of the actual population of the United States, and of course well over half of those who are employed in one way or another, are property owners. It is responsibly estimated that there are more than 50 million property owners in this country, most of whom are home-owners. The organizations with a special interest in home building point out that there is a strong tendency to shrink credit to short terms.

Corporation Profits Up

Of course, the structure rests largely upon the business and industries which employ people. The latest reports show that the net income of leading corporations has increased. Four out of five gained in the first half-year sales. These gains range from 5 to 89 percent. The overall average was 34 percent. In the light of this tremendous growth of consumer business and corporation production it is extremely difficult to find any sensible explanation for the disquieting gyrations of the stock and bond markets. The only glimmer of reason you get here is action such as in the steel industry, which is spending large sums for future development, and the promised development of the resources of some railroads. Otherwise it is generally assumed that prospects are good in those industries which deal in building, heating and air conditioning equipment, automobiles, textiles, paper and allied products, chemical products, tires and rubber products, drugs, soaps, cosmetics, cement-glass-stone, metal products, and various mining materials.

Coming directly to those who speak for consumer credit this statement which was given the American Artisan correspondent by the National Foundation for consumer credit is strikingly interesting:

"Today one reads and hears a great deal of unfounded comment that there is too much credit in our economy. . . that the people are 'in hock' to their eyes. . . that installment buying ought to be curbed. Let's look at some of the current facts.

Implications Are Misleading

"Much of this comment results from misunderstood figures issued by the Federal Reserve board. For example, the board reports that consumers now owe about $33 billion. This figure is often featured improperly when the discussion really is on installment outstandings. Actually, about $7.25 billion of this figure is non-installment credit—that is, charge accounts, single payment loans and service credits. About $25.5 billion is reported for installment outstandings. Now, this figure should be broken down into its components:

"1) *Automobile paper—about* $13 *billion.* At least one-third of this represents debt for vehicles used 90 percent or more for business, professional and "making a living' purposes. But it's all charged to consumer debt in the headlines.

"2) *Appliances, furniture and other durables—slightly over* $5 *billion.* But the Federal Reserve includes in this figure indebtedness of clubs, rooming houses, small hotels, doctors, lawyers, and other business people for equipping their enterprises. Yet it is all charged to consumer debt.

"3) *Real estate modernization loans—a little over* 1.5 *billion.* This is debt of an investment character—not debt for consumption purposes. Yet it's all included.

"4) *Personal installment loans—about* $5 *billion.* Again this figure includes a substantial volume of loans to small businesses; and some is for the purchase of securities and other investments. Yet it's all chalked up to consumer debt by some elements who report it.

"The point is, consumers do not owe anything like $33 billion on installment debt. Nor do they owe for consumer purchases and services anything like $25.5 billion . . . if several billion dollars of business and other debt erroneously included were properly subtracted.

"Now, the percentage of installment outstandings to disposable income (that is, the money people have to spend after taxes) has changed only slightly since the pre-war year of 1940. During that year disposable income amounted to $76.1 billion and installment outstanding amounted to 7.2 percent of that figure. In 1954 disposable income stood at $254 billion and installment outstandings were 8.9 percent of that figure. The current relationship of outstandings to disposable income were mid-year 1955 essentially the same as that recorded for 1954. Moreover, 57 percent of American families are currently without any installment debt whatsoever.

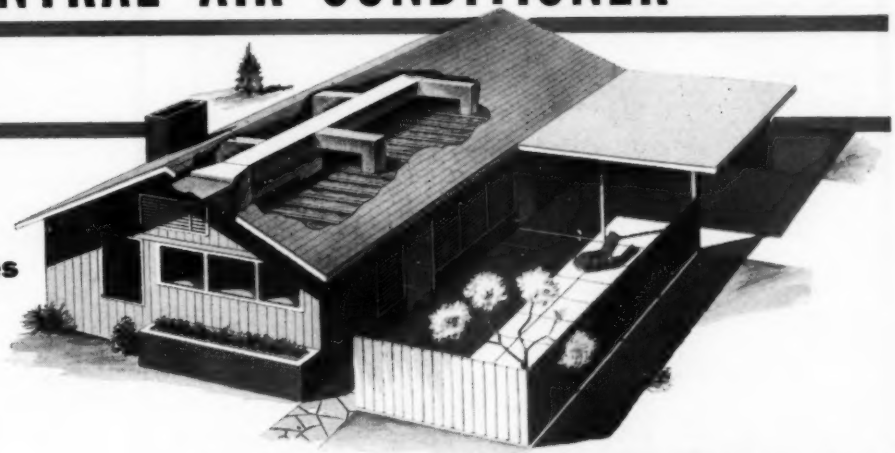
"A considerably higher proportion of families owing installment accounts today are in the middle and upper income brackets than those earning $3,000 a year or less.

"During 1954 new installment business amounted to $29 billion. During the same year almost precisely that amount was repaid on past commitments. In other words, consumers were repaying about as rapidly as new commitments were being made. So far in 1955 new commitments have slightly outpaced re-

ANY DEALER CAN SELL THE AMAZING NEW

Vornado®

CENTRAL AIR CONDITIONER



For 2, 3, or 4 Bedroom Homes

because it's a **BETTER** unit at a **LOWER PRICE**

Here's a Few of the Many Advantages

- LOWER UNIT COST
- LOWER OPERATING COST
- FASTER INSTALLATION
- HIGHER PERFORMANCE
- FULLY GUARANTEED

and...

- DESIGNED AND MANUFACTURED FOR USE IN FHA MORTGAGED INSURED PROPERTIES

New, simplified unit design, plus exclusive Fiberglas ductwork — pre-engineered and pre-fabricated — makes this amazing low cost possible.

And Vornado's reputation as specialists in the manufacture of comfort-cooling appliances is your assurance of the finest in quality and performance.

Get the details!

Products of
THE O. A. SUTTON CORPORATION
Specialists in the manufacture of comfort cooling appliances
WICHITA, KANSAS

THE O. A. SUTTON CORPORATION
1808 West Second Street — Wichita, Kansas

I want complete information on your new low-cost central air conditioners. It is understood there is no obligation.

NAME_____

FIRM_____

POSITION_____

ADDRESS_____

CITY_____ COUNTY_____ STATE_____

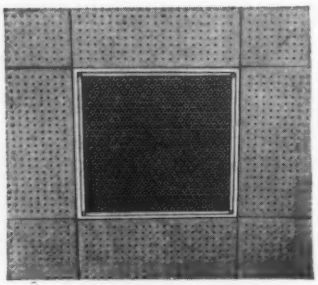
BARBER COLMAN

UNI-FLO RECTANGULAR AND

Square Ceiling Diffusers

. . . harmonize with acoustical ceilings!

- Pioneered by Barber-Colman to provide an inconspicuous means of air distribution.
- Laboratory-designed, engineered and tested . . . guaranteed performance in accordance with published engineering data
- Flexibility . . . adjustable on the job from vertical to horizontal deflection as well as one-way, two-way, three-way, or 360° air patterns without change in outer appearance
- Dust and dirt deposits limited to face of diffuser (easily cleaned) . . . minimizes smudging or streaking of adjoining acoustical blocks
- Circular or geometric diffuser plate design available for recessed or surface models

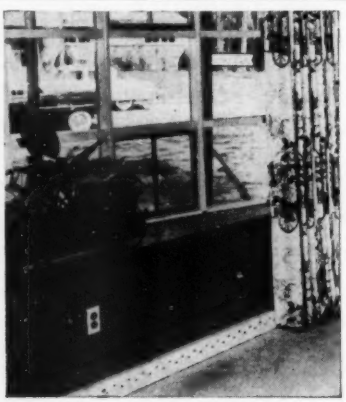


- Available with opposed-blade, gang-operated volume control (adjusted through face of unit), and Deflectrol air turning device (for positive air flow control)

DATA BULLETIN, F-6597, now available. Consult nearby Field Office, or write . . .

Barber-Colman Company

Dept. V, 1106 Rock Street **Rockford, Illinois, U. S. A.**



benefit 3 ways!

INSTALL

PATCO AIR BASEBOARD

For Cooling

For Heating

(1) You will lower YOUR installation costs, (2) get more jobs done and (3) make your customers more comfortable when you install PATCO AIR BASEBOARD. That's been the experience of contractors everywhere because:

1. you don't have to waste time handling and fitting bulky, rectangular duct work.
2. 4" or 5" round pipe (inexpensive industrial downspouting in 10' lengths) or standard duct work can be used with the PATCO connectors.
3. you simply nail the baseboard to the studs, snap on the diffuser face.
4. customers get pleasing appearance, greater economy, cleanliness, silent, draft-free operation.

PATCO AIR BASEBOARD
THE WALL RADIATES HEAT

Get complete details today and, remember, PATCO AIR BASEBOARD has all-around use in new or old homes, one story or two with or without basements.

PATCO MFG. CO.
231 N. 3rd St., Philadelphia 6, Pa.

WASHINGTON LETTER —

payment . . . due almost entirely to buoyancy of automobile sales.

Payment is Fast Enough

"Approximately 23.3 percent of present installment commitments outstanding will be repaid completely within six months. About 39.5 percent will be repaid between six and twelve months. Another 30.2 percent will be repaid between twelve and 24 months . . . leaving only 7 percent that will run more than 24 months. Although consumer credits outstanding have reached an all time high . . . retailers are still keeping their bad losses to half of one percent.

"It is only logical to believe that present bad debt and delinquency rates are reflecting the real income of American people today. Disposable income after taxes has risen from $254 billion in 1954 to an expected annual rate of $271 billion in the final quarter of this year.

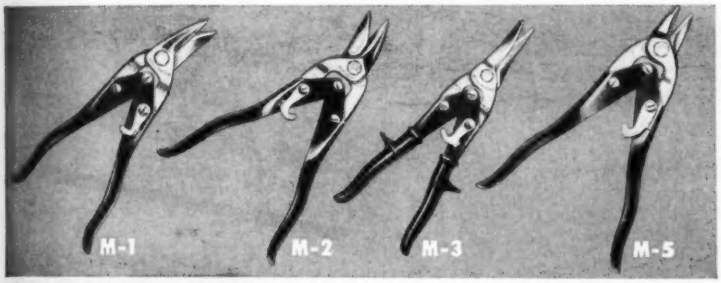
"Other factors worthy of mention are our terrific population increase . . . the record 160 million persons in the United States . . . the 40 percent rise in earnings of the typical American family . . . the increase of take-home dollars over the rise in the cost of living index . . . and the personal liquid assets of $220 billion, an all-time high.

Records Are Natural

"In view of these facts, it would be odd, indeed, if consumer credit outstandings were not at their present high record. Putting it conversely, had these outstandings remained static at their immediate post war level, none of those other high records in our economy could have been attained. And it would seem there is irrefutable evidence the people are not 'head over heels' in debt—with no buying power left to affect any down-turn in business should that occur. It would seem the surest way to start the business cycle downward would be enactment of federal regulation to restrain and reduce the sale

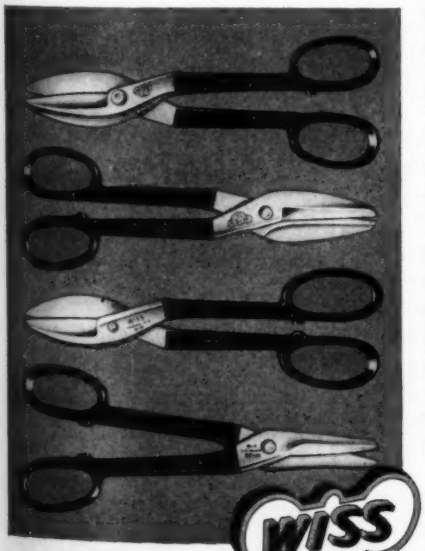
"WE FEATURE WISS SNIPS BECAUSE THEY SELL BEST WITH FEWER RETURNS"

Mr. William Sutherland, Geo. C. Wetherbee Co., Detroit, Mich., states one big reason why his firm likes to recommend Wiss metal cutting snips. There are several reasons why they are the choice of professional workers everywhere—why they sell better, with fewer returns. Wiss snips are produced largely by the handwork of skilled workers. Each pair is rigidly tested and guaranteed perfect. Bolts are set precisely to reduce wear and to increase cutting power with the least effort.



WISS METAL MASTER SNIPS: Compound action design delivers amazing cutting power. These 10" snips cut with about one-half the effort required for standard 12½" snips. One edge serrated to prevent slipping. M-1 (cuts left) and M-2 (cuts right) are designed to cut the most intricate scrolls and circles. M-3 is for shallow arcs and straight cutting. M-5 Bulldog Heavy Duty snips are tops for notching, nibbling and cutting shallow arcs in sheet metal as heavy as 16 gauge.
Now available with comfortable vinyl grips in identifying colors.

Wiss inlaid blades are made of high carbon crucible steel welded to a hot drop-forged frame to provide the extra service demanded by professional workers.



WISS INLAID SNIPS
High carbon crucible steel welded to a hot drop-forged frame provides that *extra* service demanded by professional users everywhere. Six Straight Cutting sizes from 11½" to 17", including Bulldog Snips for notching. Three Combination* Cutting sizes, 12½", 13½" and 14½".

WISS SOLID STEEL SNIPS
For those whose requirements are less specialized than the professional user. Hot drop-forged of fine carbon steel, they meet or exceed government specifications. Four straight cutting sizes, 8" to 12½". Four Combination* Cutting sizes, 7", 10", 13" and 16" Bulldog Snips for notching.

*Made with straight blades, but ground and shaped so they readily cut curves and irregular shapes as well as straight.

J. WISS & SONS CO., NEWARK 7, NEW JERSEY

Manufacturers of Shears, Scissors, Pinking Shears, Metal Cutting Snips and Garden Shears

Wiss snips are hot drop-forged of the finest steels available.

Highly skilled craftsmen make final adjustments to assure that Wiss snips will cut perfectly for a long time.

The Choice of Leading
ORIGINAL
EQUIPMENT
MANUFACTURERS

Zatko

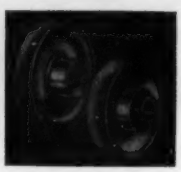
ONE PIECE
Stamped V-Belt
Steel Pulleys

Greater Strength
•
Longer Wear
•
Lower Cost

Standard Fractional Horse Power V-Belt Pulleys — All Sizes in Stock.

ALL PULLEYS BROACHED and 100% Inspected

Variable Pitch. Allows Speed Variation up to 30%. OD's from 3¼-4½"



Heating and Air Conditioning O.E.M. should write for literature and prices

World's Largest Manufacturer of Stamped One-Piece Pulleys.

ZATKO
Metal Products Co.

20850 St. Clair Avenue
Cleveland 17, Ohio

WASHINGTON LETTER —

of goods and services to sound, worthy credit buyers.

"Seldom does one read about the families who know how to use credit intelligently and prudently . . . a report of the very definite values they have been able to secure from this convenient method of acquiring long lasting products and services . . . but there are millions upon millions of them just the same."

The National Foundation for Consumer Credit is a non-profit nationwide research and educational organization sponsored by manufacturers, wholesalers, retailers, insurance companies and financial institutions interested jointly in the perfection of credit service and the economic security of the credit function. It stands high with the government.

'Slump' Is A Leveling-Off

It is worth noting our friends in government emphasize that retail sales are running strongly and construction activity is maintaining its record pace. They speak of the "summer slump" as little more than a leveling of the continued upward movement. August and September are expected to bring the moderated influence of automobile plant shutdowns for model changes, but no one here expects the changeover will have any depressing effects.

They tell you in Washington that more persons are at work today than ever before in the nation's history and that they are turning out an unparalleled volume of goods and services. You hear about the record breaking incomes, and how they are being most freely spent. And you are told that businessmen are going ahead with capital expenditures, and purchasing agents see more and more reasons for reaching out than for short commitments. Throughout the metalworking industries, the manufacturers who come here are told they will have to pay more for their own labor, more for raw materials and more for purchased parts and components.

Switch to . .

LINCOLN

Gas-Fired and Oil-Fired Furnaces and Air Conditioners

COMPLETE LINE — size ranges from 75,000 to 180,000 B. T. U. output at bonnet.

COMPLETE PACKAGE UNITS — factory assembled and tested — ready to install.

10 YEAR WARRANTY — on both the combustion chamber and heat exchanger.

MAXIMUM HEAT TRANSFER — assured by high efficiency 12 gauge steel heat exchanger.

FULLY U/L APPROVED — and acceptable by both F.H.A. and V.A.

COMPETITIVELY PRICED — every unit priced to meet today's competitive market.

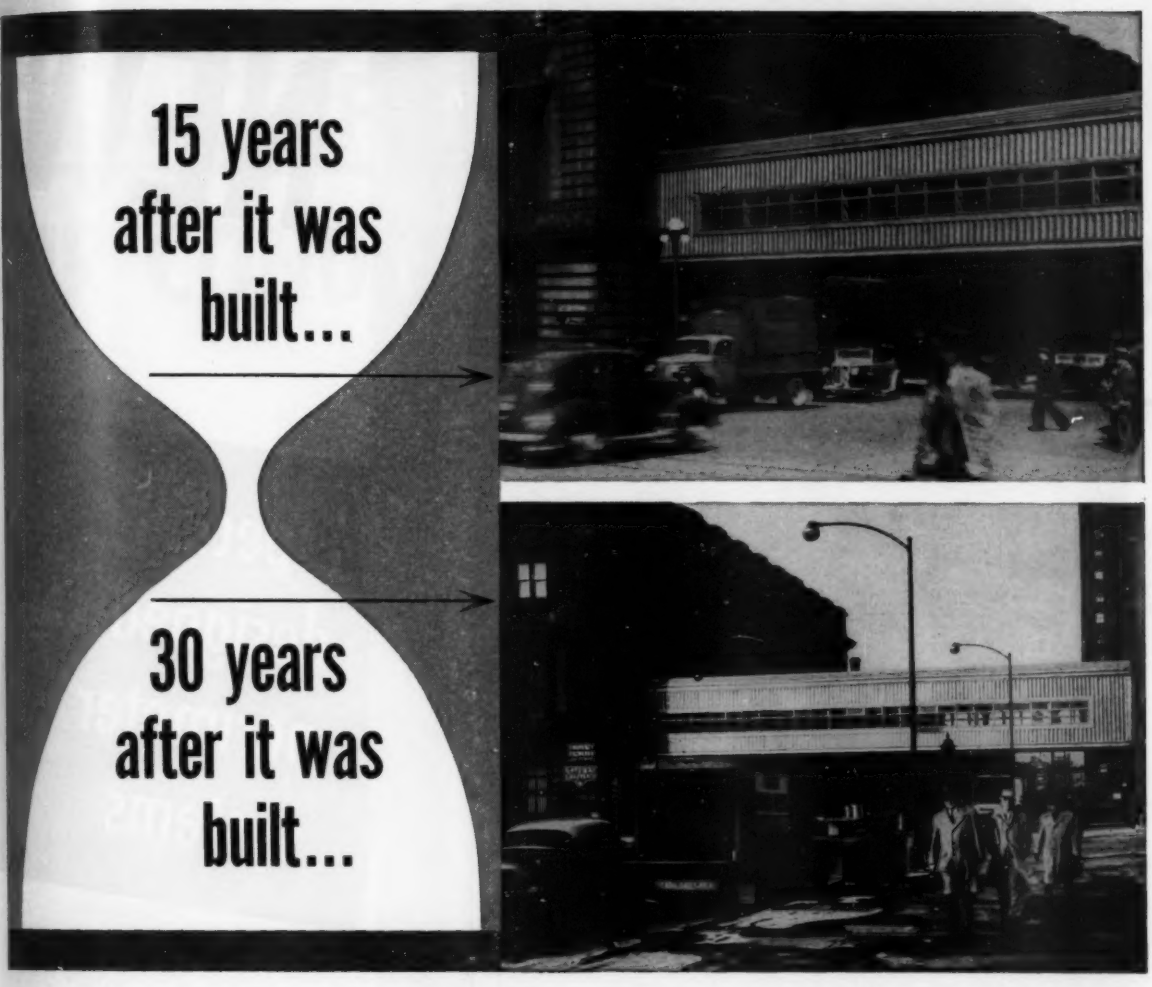
Exclusive distributer and dealer franchises are available in certain desirable areas. Inquiries are invited.

WRITE FOR FULL INFORMATION

LINCOLN FURNACE Co., Inc.

MANUFACTURERS OF GAS & OIL FURNACES AIR CONDITIONERS

230 Goffle Road • Hawthorne, N. J.



This STAINLESS "Covered Bridge" is *EVER-NEW*

"INFO" for Architects and Builders

1 "AL Structural Stainless Steels"—12 pages on stainless grades, properties, forms, finishes, standard "specs," uses and advantages.

2 "Stainless Steels for Store Fronts and Building Entrances"—40 pages of valuable data on examples and details. AIA File No. 26D.

3 "Stainless Steel Curtain Walls"—A 24-page progress report on methods. AIA File No. 15-H-1.

Write for Details

Address Dept. AA-70

The top photograph of the AL Stainless Steel-surfaced concourse that connects the Chicago Daily News building with the North Western station was taken about 1939-40. The lower picture was made early in 1955. There's no discernible change.

Another 30 years—50 years—100 . . . the bridge's stainless shell will still be just as good as new. No one knows *how long* AL Stainless actually will last, but it could be for centuries, if required. And all the time it requires no particular maintenance, no painting or refinishing—just occasional washing to remove the grime that isn't carried away naturally by wind and rain.

No other architectural metal can match stainless steel in these properties. Not one can last as long, cost as little to maintain, and prove as economical in the long run. ● Use AL Stainless in *your* projects, for maximum service and lasting beauty, both in exteriors and interiors. Ask us for any help you need. *Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22, Pa.*

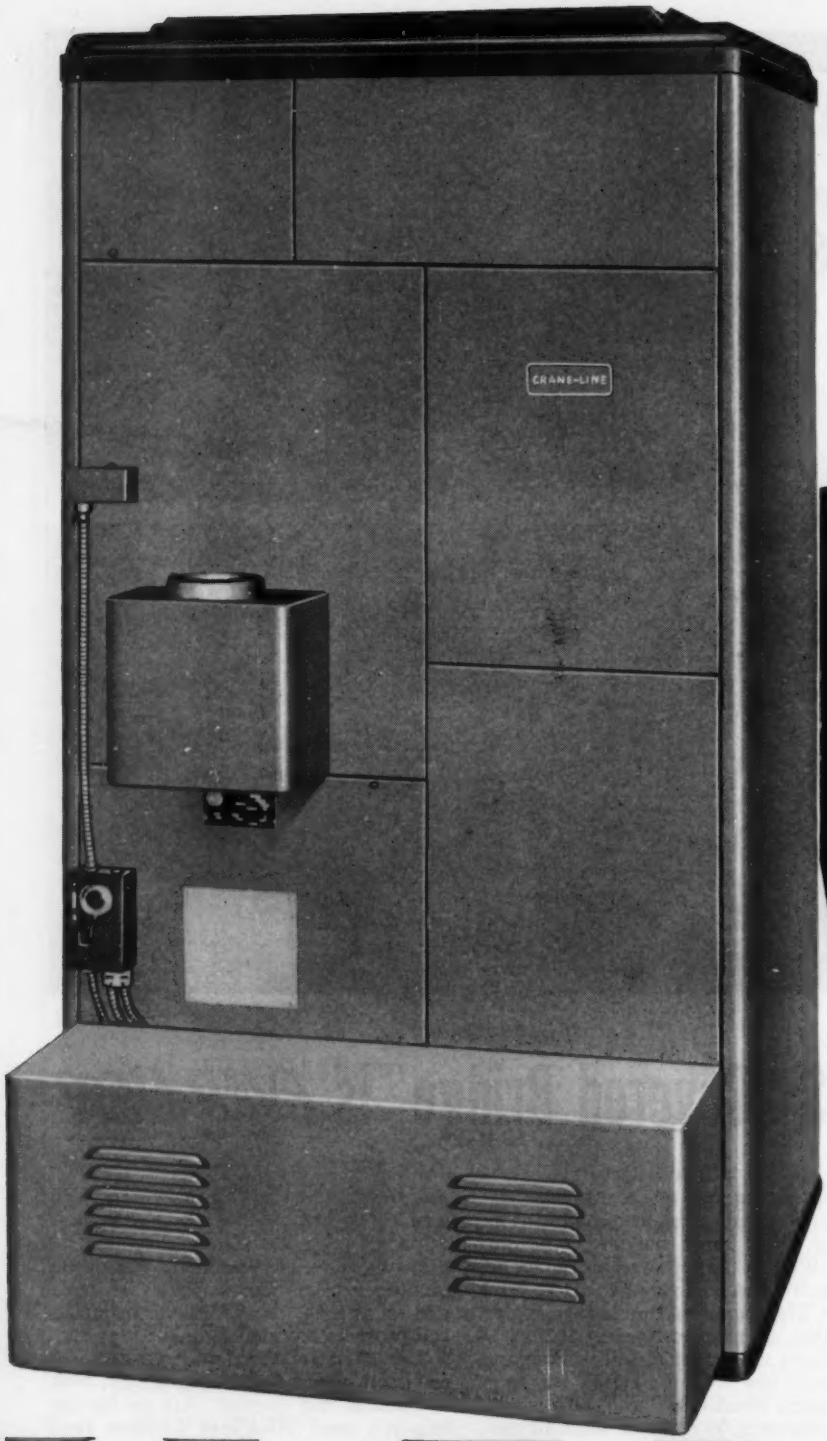
WAD 8884

For Stainless Steel in ALL Forms—call

Allegheny Ludlum

AL STAINLESS STEEL

Warehouse stocks carried by all Ryerson Steel plants



NEW!

Especially designed for perimeter systems

Gas or oil fired. Available in two- or three-ton sizes. Available without cooling chassis —ideal for tract jobs.

CRANE

COUNTERFLOW YEAR 'ROUND AIR CONDITIONERS BY CRANE

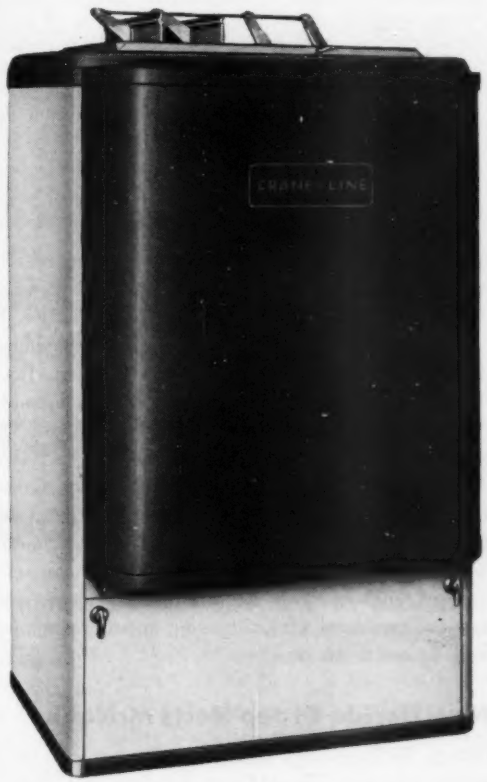
Now there's a year 'round air conditioner for use in basementless homes with perimeter heating systems.

It's the new Crane *COUNTERFLOW* Year 'Round Air Conditioner that supplies warm air *or cool air* from the bottom, to run through ducts in the slab or under the floor.

Like the Crane Hi-Boy Year 'Round Air Conditioner, the new Counterflow models have *two* compressors (instead of the usual one) for greater efficiency and comfort. It's easy to install, comes mostly assembled in three cartons, and there's no refrigeration work to worry about.

Factory sealed refrigeration system is fully warranted under Crane's Five-Year Protection Plan and slides easily in and out of the cabinet. Very small and compact—and it's priced to sell in projects.

See your Crane Branch or Crane Wholesaler for all the facts.

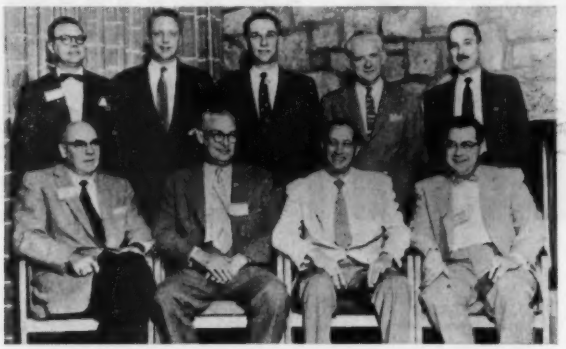


Crane's famous Hi-Boy Year 'Round Air Conditioner for regular installations. Both Counterflow and Hi-Boy have two compressors for better humidity control and lower power consumption.

CRANE CO.
General Offices: 836 S. Michigan Ave., Chicago 5, Ill.
VALVES • FITTINGS • PIPE • KITCHENS • PLUMBING • HEATING

CRANE STARTS ITS SECOND CENTURY OF QUALITY
Founded July 4, 1855

WHAT THE ASSOCIATIONS ARE DOING



ATTENDING the recent executive management school sponsored by the National Association of Wholesalers were several members of the heating and air conditioning industry. Seated (from left) are Ralph Bell, Gail Mason, Emil Oeffinger and Dick Young. Standing are Walter Burnside; Charles Vaughn; Robert Bauer; Paul Bolton, executive vice president of NAW; and Dr. James H. Davis of Ohio State University

Wholesalers Attend Management School

THE NATIONAL Association of Wholesalers recently sponsored a one-week course on management at Ohio State University for wholesalers in various industries. Heating and air conditioning wholesalers in attendance were Robert Bauer of the Heating Supply Co., Inc., Rochester; Ralph Bell, Richmond Supply Corp., Richmond, Ind.; Walter Burnside, Niles Sheet Metal Supply Co., Niles, O.; Gail Mason, Warm Air Heating Supply Co., Dearborn, Mich.; Emil Oeffinger, The Irwin Steel Co., Canton, O.; Charles Vaughn, Wisconsin Furnace Co., Madison; and Dick Young, Young Heating Supply, Inc., South Bend, Ind. Approximately 67 completed the course, which covered such subjects as sales management, sales promotion, personnel administration, operations management and financial management.

New Florida Group Elects McNabb

GLENN MCNABB has been elected president of the recently organized West Coast Roofing and Sheet Metal Contractors' Association. Membership of the new association is drawn from all counties in the West Coast area of Florida. Other officers include Joe Aizpuru, vice president; M. A. Whidden, secretary; and Sam Graziano, treasurer.

Georgia Appoints Committees

JAMES H. WELCH, president of the Roofing and Sheet Metal Contractors Association of Georgia has recently appointed committee chairmen and members to serve on the group's standing and special committees.

Standing committee chairmen include the following: J. D. Knox, suppliers relations; I. C. Mock, labor relations; K. F. Dunlap, Jr., finance; Charles W. Bryan, Jr., membership; John R. Tufts, legislative; and I. Marvin Kelly, Jr., by-laws and regulations.

Heading the various special committees are I. C. Mock, sales tax problems; Wendell Townsend, insurance coverage; W. A. Strickland, architects relations; James M. Brown, special service; Hugh Jenkins, sales promotion; John R. Tufts, heating and air conditioning; J. D. Booth, sheet metal problems; George Parker, blowing insulation problems; and K. F. Dunlap, Jr., costs and overhead. E. L. Murphy heads the suppliers advisory committee.

Few Pa. Cities Using Heating Codes

WRITING IN A RECENT issue of the Pennsylvania Sheet Metal, Air Conditioning and Roofing Contractors Association News Reel, Bernard Lawrence reports the results of a recent survey conducted by Earl Liebermann, secretary of the Pennsylvania group. Mr. Lawrence, chairman of the heating and cooling committee for the Sheet Metal Contractors' National Association, reports that Secretary Liebermann surveyed 47 Pennsylvania cities to determine how many of them were operating under heating codes. "Of the 47 cities surveyed," Mr. Lawrence states, "only five have heating codes included in their building codes. Not one of them has a separate heating code." He points out that this report emphasizes strongly how much there is to be done by heating contractors "to advance, improve and modernize our industry."

Wisconsin Contractor Law Relaxed

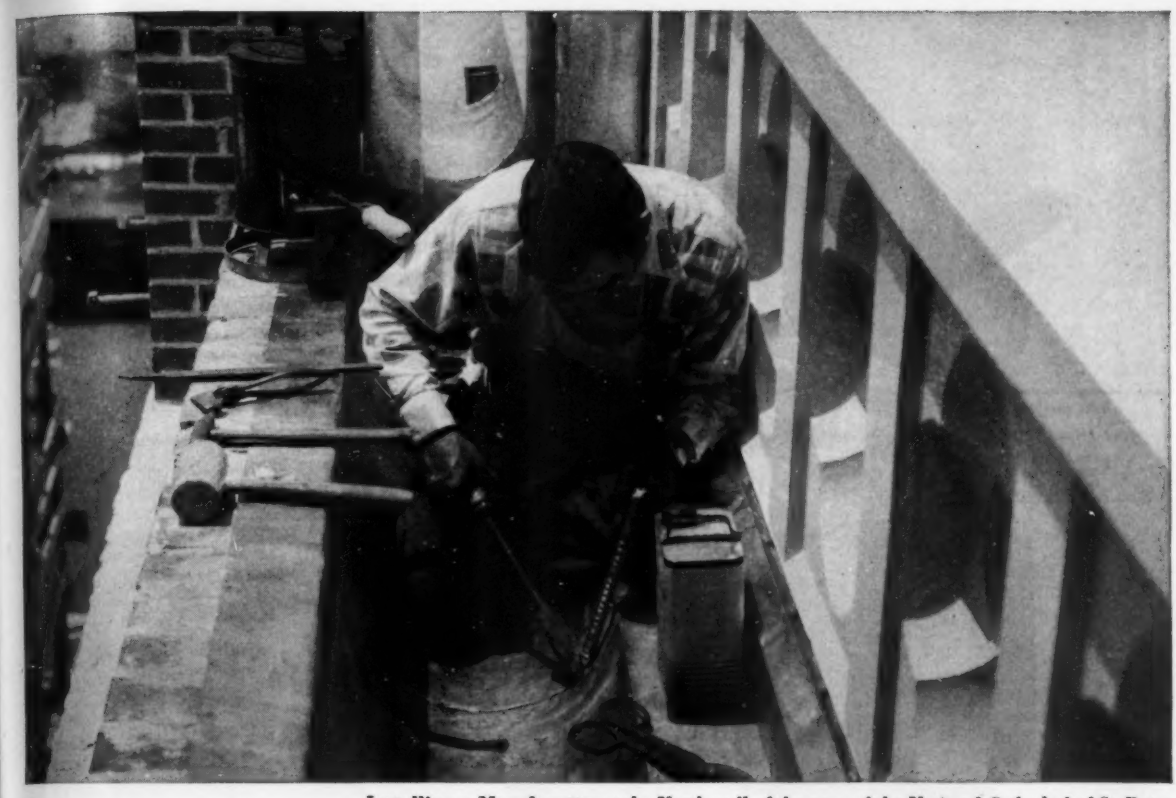
A RECENT WISCONSIN LAW, according to the Sheet Metal Contractors' Association of Wisconsin News Bulletin, says that municipalities "may" require a general or prime contractor to list the names of his subcontractors. The bill substitutes the word "may" in place of "must" as used in former statutes. Another change in Wisconsin law requires a municipality to let contracts separately for mechanical trades such as heating, ventilating and electrical.

Cooling Gets Boost on TV

HELPFUL SUGGESTIONS for people contemplating an air conditioning installation were offered by Peter B. Gordon, second vice president of the American Society of Heating and Air-Conditioning Engineers on a recent television program.

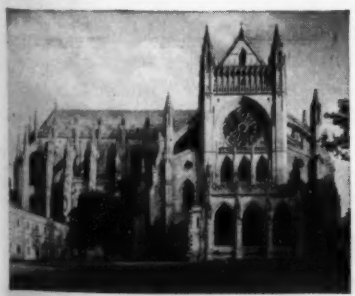
Mr. Gordon expressed his viewpoints on the CBS program, Eye On New York, conducted by Bill Leonard. Mr. Gordon commented on the current trends in air conditioning and indicated that the industry has a healthy and optimistic outlook for the future. He said he is convinced the trend toward more residential central cooling systems will grow with each succeeding summer.

(More Association News on page 44)



Installing a Monel gutter at the North wall of the nave of the National Cathedral of St. Peter and St. Paul, Washington, D. C. Under construction since 1907 . . . and almost half built.

Are you doing your share of Monel roofs?



45,000 pounds of rustproof and corrosion-resisting Monel nickel-copper alloy have already been used in this classic Gothic National Cathedral, for flat, standing and batten seam roofing . . . as well as for flashings and gutters.

Contractor: J. Edward Linck Sheet Metal Works, Philadelphia and Washington.

Architect: Philip H. Frohman.

Monel* roofing jobs are plentiful. And plenty profitable.

Fact is that more and more Monel nickel-copper alloy roofing is being specified by architects. Because it stands up so well, and so long.

More and more roofing contractors are getting this work. And glad they are. Glad to find there's no special trick to laying a Monel roof. In fact, it is hardly different from handling any other roofing metal.

Actually, Monel Roofing Sheet has a special soft temper. This makes it a cinch to cut and work with. Shape it any way you want . . . even to 180° bends . . . Monel won't crack. You can pre-tin sheet edges in your shop . . . and get neatly soldered joints.

*Reg. Trademark

Use a heavy iron for installation. And keep it hot. That's all there is to it. You get a tight, perfect seam every time.

So don't let those profitable Monel nickel-copper alloy roofing jobs get away. Be prepared to quote. On office buildings. City buildings. Schools. Churches. Factories. Even private homes.

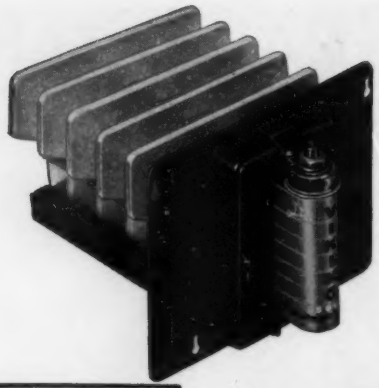
We'll be glad to help you. Send for "Instructions for the Soft Soldering of Monel Roofing Sheet" and "Basic Application Data—Monel Roofing Sheet." They're both free . . . and extremely helpful. A postcard will bring them to you. Just write "Roofers' Bulletins" and your address.

The International Nickel Company, Inc.
67 Wall Street New York 5, N. Y.

INCO TRADE MARK

50 YEARS OF Nickel Alloy Progress PIONEERED BY MONEL 1905-1955

Monel Roofing ..."for the life of the building"



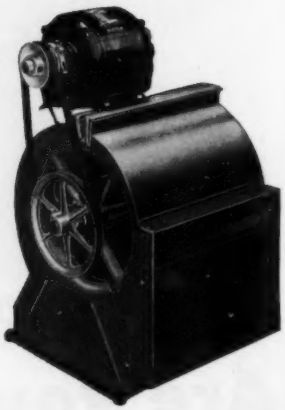
"5600" AquaMagic Humidifiers by Viking

World's only humidifier with a leak-proof ovenware glass pan. Holds up to 10 evaporator plates although 5 fill most home humidifier needs.

We're going! Are you?
42nd ANNUAL CONVENTION
NATIONAL WARM AIR HEATING & AIR CONDITIONING ASSOCIATION
NOV. 30-DEC. 1, 1955—HOTEL STATLER, N.Y.C.

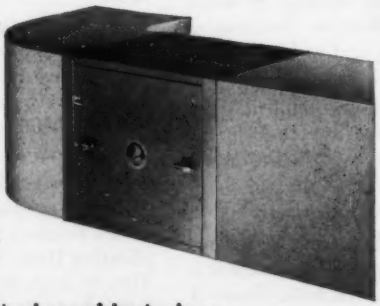
Blower Packages by Viking

Five models — two with round and three with square cabinets.
Five capacities for from 75,000 to 230,000 BTU/HR furnaces.



Blower Assemblies by Viking

Belt Drive and Direct Drive Blowers in a wide range of sizes and capacities. Available with permanently mounted feet or new "Lock-on" feet for factory installation in new furnaces or as replacement blowers for dealer servicing.



Duct Blower Packages by Viking

Two exterior cabinet sizes and six blower capacities from 600 to 3400 CFM available. You can mount them in any position for air movement through heating, ventilating or cooling ducts.

Order From Your Nearest Viking Wholesaler or Write For Details

Viking

AIR CONDITIONING

Division of The National-U.S. Radiator Corporation
5601 Walworth Avenue • Cleveland 2, Ohio

Profit by "Mr. B" local co-op ads!

Tell your customers *you* are "Mr. B"—the man to see for **BRYANT** quality equipment. Focus the full power of national ads, etc. on your business, your profits!

be "Mr. B"

(AUTHORIZED BRYANT HOME COMFORT DEALER)

Only "Mr. B"—the Bryant Home Comfort Dealer—has *all 8* of these selling assets to build his business BIG:

1. A name customers know and want
2. The most complete line of automatic heating, air conditioning, water heating
3. Quality equipment for every market
4. Exceptional distributor service
5. Professional sales training
6. Personalized selling tools for you
7. National advertising featuring you
8. Co-op "Mr. B" ads for local papers

For bigger profits now, for a secure and prosperous future—see your Bryant Distributor. Ask him about Bryant's big "Mr. B" action program, and how it can make sales and money for you!

bryant®

AUTOMATIC HEATING
AIR CONDITIONING
WATER HEATING

WITH THE ASSOCIATIONS

(Continued from page 40)

Kalamazoo Discusses Heating Code

FEATURE of the September meeting of the Kalamazoo Sheet Metal, Roofing, Heating & Air Conditioning Contractors' Association was a discussion of the proposed new heating and air conditioning code for Kalamazoo and surrounding areas. Fred A. Madaus and Glen W. Rynbrand, who have worked for almost three years on the preparation of the code, presented it to the members for their suggestions and criticisms. Because of the general interest in the proposed code, non-member contractors from the area and from as far away as Muskegon, Battle Creek and Lansing were invited to participate in the meeting. Another highlight was the presentation of two movies on selling.

Florida Directors Map Membership Plans

THE BOARD OF DIRECTORS of the Roofing and Sheet Metal Contractors Association of Florida met recently at the Dixie-Sherman Hotel, Panama City. Methods for increasing membership were discussed by Steve Raymond, and George Ferber presented a report on the group insurance plan for workmen's compensation. A motion that advertising manufacturers be furnished with a list of the group's membership upon request was carried, and another was passed providing that associate members be supplied with the list at the rate of 25 cents per name. Appointed by President Brown to serve on the apprenticeship training committee under the chairmanship of Howard Carpenter were David Hess, Vic Kinsey and Steve Raymond.

The association plans to hold its 1956 convention in St. Petersburg, April 27 and 28.

Wholesalers Conduct Sales Courses

A PROGRAM dedicated to creative selling in the warm air heating and residential air conditioning field is being conducted by the National Heating and Airconditioning Wholesalers association. It is known as WIDA (Wholesalers Integrated Development Approach). The program consists of:

1) Conferences
2) Guided experience coaching.

Every session must result in some outstanding activity in which each person attending is called upon to participate. Also, each session will be directly connected to preceding programs as well as succeeding sessions.

The entire program will be worked out so that the five following steps will be explored completely:

1) Prospect location
2) Introductive selling approach
3) Interviews
4) Closing the sale
5) Technical aspects of selling heating and air conditioning equipment.

The training classes will be scheduled by local groups throughout the United States. Time and place of each meeting will depend upon local conditions and will be announced by local members of the National Heating and Airconditioning Wholesalers association.

OHI Holds 'Builders Clinic'

THE FIRST OF A SERIES of management conferences co-sponsored by the Oil-Heat Institute of America and various colleges and universities was held recently at Rutgers University. Purpose of the initial conference was to assess and develop oil heating's place in the national home construction field. Speakers included Irwin Jalonack, former vice president of Levitt & Sons; Claud Berman; and other home construction executives. Topics discussed included How to Sell and Deal with Builders, How to Sell More Oil Heating Equipment in the New Home Market, How to Work with the Builder, and How to Estimate the Job for Profit.

Indiana Talks Taxes, Sales, and A C

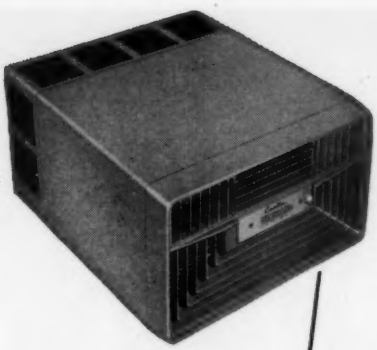
THE INCREASING TEMPO of central air conditioning for residential applications, how to sell, install, service and finance the equipment, plus other problems faced by the warm air heating and residential air conditioning dealer were the subjects discussed at the fall district meeting of the Sheet Metal and Warm Air Heating Contractors' Association of Indiana in Muncie on Friday evening, Sept. 30. V. Hazelton was chairman of the meeting which was sponsored by Knapp Supply Co. and the Treaty Co., both of Muncie. The Indiana Fur-Mets were supper hosts.

One of the sessions of the meeting was a symposium with the panel consisting of: T. B. Speaker as moderator, and J. W. Ridgway, Robert Leas and John E. Schillings as members. The panel presented its views on current practices in the industry and answered questions from the floor. In this way many of the dealers in attendance were able to obtain specific information about air conditioning problems they had encountered.

The financing of equipment was explained by John DiMatteo, Chicago manager, First Bancredit Corp. in his discussion of Time Payment Selling of Heating and Air Conditioning Installations. Mr. DiMatteo recommended that dealers endeavor to sell the prospect on what the monthly cost will be rather than on the total price of the equipment needed. He pointed out that many people think in terms of monthly outlay of their income instead of costs that won't be faced for a few months.

William E. Garber, Jr. outlined the procedures necessary for dealers to follow when entering claims for rebates due them on overpayments made to the Indiana Gross Income Tax Department.

(More Association News on page 48)



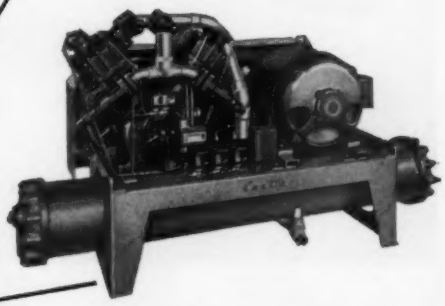
Window Air Conditioners

Packaged Air Conditioning units—2 to 20 tons

More jobs... More profit!

WITH THIS

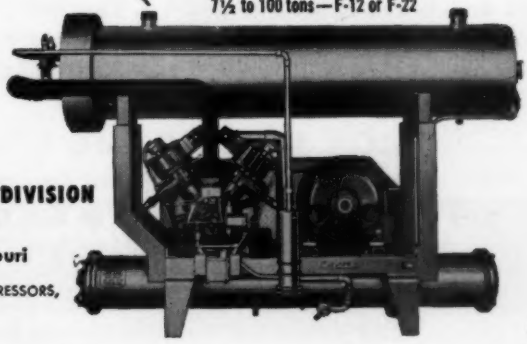
complete Curtis LINE



Condensing units up to 100 tons—F-12 or F-22

Multi-Zone Units—serving 2 to 8 zones

Packaged Liquid Chillers—7½ to 100 tons—F-12 or F-22



You'll sell more jobs, and make more profit, with this well-rounded Curtis line. Curtis equipment sells readily because it is backed by one of the oldest and most respected names in the business. Curtis products are presold for you by hard-hitting national advertising in *Saturday Evening Post, Time and Newsweek*, plus many national business and trade magazines.

WRITE TODAY for information on how you can obtain a Curtis direct factory franchise.

Curtis REFRIGERATING MACHINE DIVISION

of Curtis Manufacturing Company

1982 Kienlen Avenue, St. Louis 20, Missouri

Other Curtis Products: INDUSTRIAL AND AUTOMOTIVE AIR COMPRESSORS, AUTO LIFTS, CAR WASHERS, AIR HOISTS

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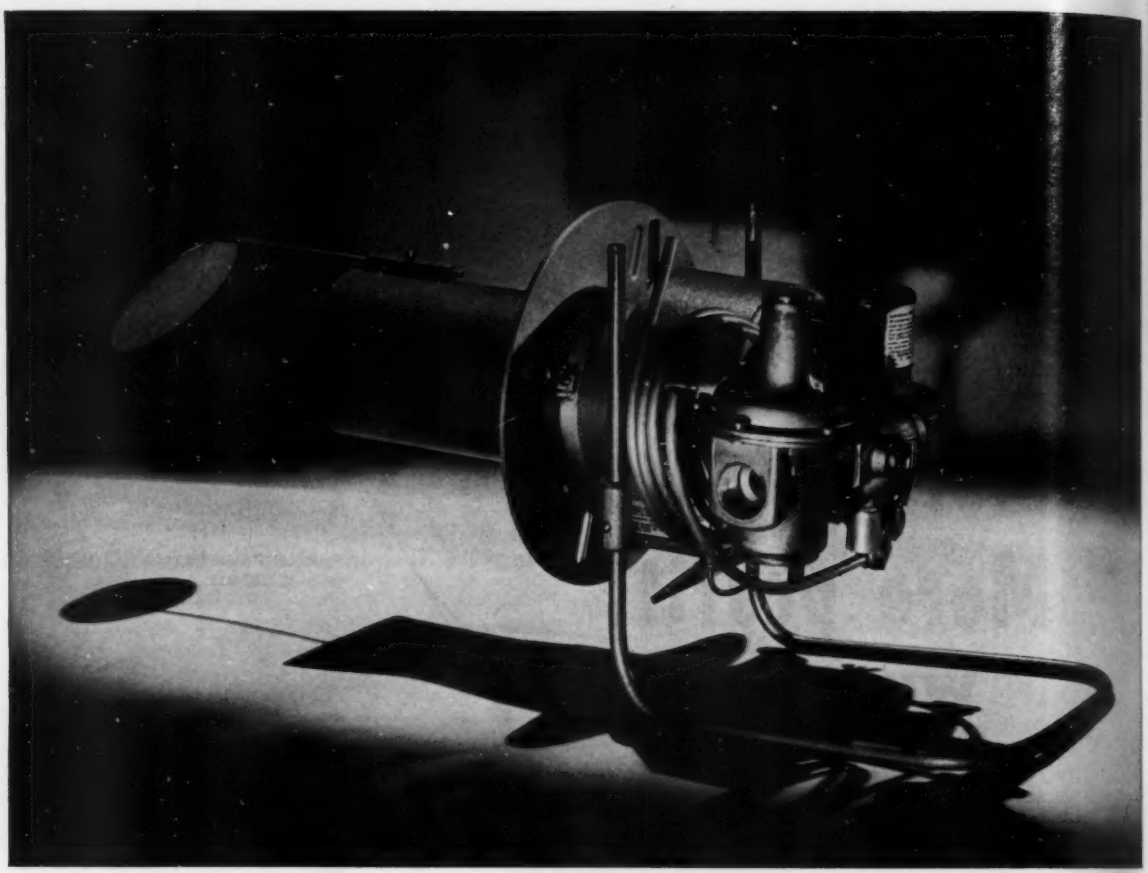


This Quality Burner costs you less than any comparable model

Lowest-priced burner in the field . . . easiest to install . . . practically no service calls . . . that's what our dealers are saying about the new Barber GUN-HEAT gas conversion burners.

Look at the GUN-HEAT model shown above. It's the popular SNG 1-A designed for converting oil-fired boilers and furnaces to gas. AGA tested and listed from 65,000 to 185,000 BTUH on natural and mixed gases. Other models are available up to 350,000 BTUH.

Because we know that repeated service calls can gobble up dealer's profits, Barber engineers have wrapped up 35 years of burner know-how in the GUN-HEAT to make it trouble-free in operation and easy to install correctly.

The SNG 1-A, for example, has no moving parts. The venturi is super-strong pressed steel and the blast tube is seamless welded.

How can quality burners be priced so low? Briefly, because this burner is designed for specific applications, we have been able to standardize on parts and substitute steel fabrications and steel stampings in place of costly castings. The result is mass production methods for Barber—and lower costs for you.

Write for specifications and prices on the GUN-HEAT to the address below.

THE Barber MANUFACTURING COMPANY
GAS AND OIL BURNER DIVISION
3701 Superior Avenue, Cleveland 14, Ohio • HE 1-6045

NIAGARA

meets the need for a low-cost quality furnace with the

ALL NEW NIAGARA Series 70

FORCED AIR FURNACE LINE

Model G-70-100FA

Model O-70-100FA

Fully Automatic GAS OR OIL MODELS

9 DIFFERENT OIL-FIRED MODELS FROM .75 g.p.h. to 1.5 g.p.h.

15 DIFFERENT GAS-FIRED MODELS FROM 50,000 BTU to 140,000 BTU

HIGH BOY— DOWN FLOW— BASEMENT MODELS to fit ANY HOME HEATING REQUIREMENT

NEW Construction Features

- Compact Efficient Design
- Modern Styling
- Completely Assembled
- Completely Wired

NEW HEAT EXCHANGER

- Cylindrical in shape—made entirely of 14 gauge steel

Direct or Belt Driven Blowers

- Small-size furnaces equipped with direct-drive, center-motor-mount twin wheel blower.
- Belt-drive blowers optional on all models.

SELECTION OF CONTROLS

Choice of A.G.A. approved Honeywell, Standard or Self-generating controls.

OIL MODELS equipped with famous NIAGARA OIL BURNER with the Supra-Flame Head

AMERICAN GAS ASSOCIATION · APPROVED · COMPLIES WITH NATIONAL SAFETY REQUIREMENTS

HERE'S A PROFIT BUILDER FOR YOU

For Complete Information and Specifications Write or Phone

NIAGARA FURNACE DIVISION

THE FOREST CITY FOUNDRIES COMPANY

2500 West 27th Street • TOwer 1-5040 • Cleveland 13, Ohio

NIAGARA—the word for maximum heat at minimum cost.

WITH THE ASSOCIATIONS

(Continued from page 44)

Coming Events

Nov. 1-5—World Symposium on Applied Solar Energy, Westward Ho Hotel, Phoenix, Ariz. Sponsored by the Association for Applied Solar Energy, Stanford Research Institute and the University of Arizona. Lewis W. Douglas, Chairman, Suite 204 Mayer-Heard Bldg., Phoenix.

Nov. 27-29—National Heating & Airconditioning Wholesalers, Inc., fall annual meeting and convention. Hotel Governor Clinton, New York. Wilbur R. Bull, Executive Director, 1200 W. Fifth Ave., Columbus, O.

Nov. 28-Dec. 1—Air-Conditioning and Refrigeration Institute, 9th Exposition of the Air-Conditioning and Refrigeration Industry. Atlantic City, N. J. George E. Mills, show director, 9th Exposition of the Air-Conditioning and Refrigeration Industry, 1346 Connecticut Ave., N. W., Washington, D. C.

Nov. 28-29—National Warm Air Heating and Air Conditioning Association, board and committee meetings. Hotel Statler, New York. George Boeddener, Managing Director, 640 Engineers Bldg., Cleveland 14.

Nov. 30-Dec. 1—National Warm Air Heating and Air Conditioning Association, annual convention. Hotel Statler, New York. George Boeddener, Managing Director, 640 Engineers Bldg., Cleveland 14.

Dec. 1-3—American Society of Refrigerating Engineers, annual meeting. Traymore Hotel, Atlantic City, N. J. R. C. Cross, Executive Secretary, 234 Fifth Ave., New York 1.

Jan. 22-26—National Association of Home Builders, annual convention. Conrad Hilton Hotel, Chicago. John M. Dickerman, Executive Director, 1625 L St., N. W., Washington 6, D. C.

Jan. 23-25—American Society of Heating and Air-Conditioning Engineers, Inc., annual meeting. Sheraton-Gibson Hotel, Cincinnati. A. V. Hutchinson, Executive Secretary, 62 Worth St., New York 13.

Feb. 2-3—Sheet Metal and Warm Air Heating Contractors' Association of Indiana, annual convention. Hotel Severin, Indianapolis. Frank E. Anderson, Executive Secretary, 439 S. 17th St., Terre Haute, Ind.

Feb. 5-8—New York Sheet Metal, Roofiing & Air Conditioning Contractors' Association, annual convention. Hotel Utica, Utica, N. Y. Clarence J. Meyer, Executive Secretary, 567 Genesee St., Buffalo.

Mar. 11-14—Sheet Metal Contractors Association of Wisconsin, annual convention. Hotel Schroeder, Milwaukee. R. S. Schmieder, Executive Secretary, 8320 W. Bluemound Road, Milwaukee.

Mar. 22-23—Michigan Heating and Sheet Metal Association, Inc., annual convention. Hotel Fort Shelby, Detroit. N. J. Biddle, Executive Secretary, 3035 E. Grand Ave., Detroit 2.

Apr. 19-21—Gas Appliance Manufacturers' Association, annual meeting. The Greenbrier Hotel, Hot Springs, Va. H. Leigh Whitelaw, Managing Director, 60 E. 42nd St., New York 17.

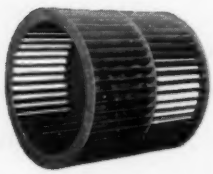
May 9-12—Sheet Metal Contractors' National Association, Inc., annual convention. Shoreham Hotel, Washington, D. C. J. D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.

June 3-6—American Society of Refrigerating Engineers, semi-annual meeting. Sheraton-Gibson Hotel, Cincinnati. R. C. Cross, Executive Secretary, 234 Fifth Ave., New York 1.

June 18-20—American Society of Heating and Air-Conditioning Engineers, semi-annual meeting. Shoreham Hotel, Washington, D. C. A. V. Hutchinson, Executive Secretary, 62 Worth St., New York 13.

Prepare for the Higher Pressure Trend

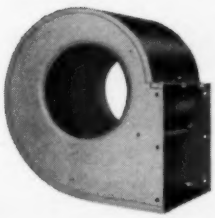
Check the potentials of Clarage Fan Equipment



Equip your Air Conditioning Units, Cooling Towers, Evaporative Condensers, etc., with Clarage Type DF Wheels and Housings, or Complete Fans.

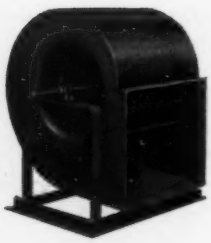
Clarage equipment has what it takes for today's higher pressure requirements — is suitable for pressures up to 8" with only slight changes from standard construction.

Thanks to heavier duty construction, here's equipment that can be relied on for full rated, trouble-free operation and longer service life. In fact, it is in a class by itself. For example, individual blades are strongly RIVETED to the rim and backplate, a large flange on the CAST IRON hub gives added rigidity to the rugged centerplate, and HEAVY GAUGE steel is used for the housing.



Streamlined housing inlets, wheel blades that are properly shaped throughout their entire depth, and precision wheel balancing with special balancing machines assure efficient, quiet performance.

Wheels and housings can be hot dipped galvanized for protection against severe moisture conditions. Other special features and constructions, such as spark-resistant aluminum wheels, are also available.



Start capitalizing now on the superior quality of Clarage Type DF fan equipment. Contact us for complete information.

Clarage Fan Company

Kalamazoo, Michigan

Sales Engineering Offices in All Principal Cities

Brundage . . . blowers since 1919

Customers say it so much better

"For the past six years I have been dealing with various manufacturers and suppliers and I can truthfully say that I have never had such co-operation and genuine desire to give the very best of service as I have enjoyed from your company personnel."

— — —

After 36 years in the blower business, we are expected to provide the best in air handling equipment. But, it's service to every customer, large or small, that keeps us growing.

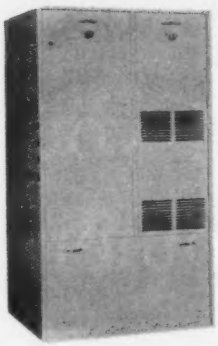
That's why we appreciate hearing things like this from our customers. It lets us know that Brundage service is up to the standards we strive for.

We'd like an opportunity to serve you in the same way.

THE Brundage COMPANY

504 N. PARK ST. KALAMAZOO, MICH.

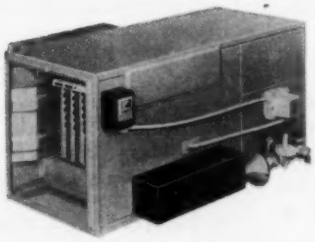
PHONE 2-0251



HEATING—COOLING COMBINATIONS

VERTICAL FORCED AIR FURNACES

COUNTERFLOW FORCED AIR FURNACES



HORIZONTAL FORCED AIR FURNACES

add profits with

WEATHERAMIC

in bank note green

You naturally expect superior performance of Utility—and the new Weatheramic series lives up to that reputation. But it also offers you the exciting plus of color—Bank Note Green! This handsome, durable finish, with its eye-catching, heart-warming, sales-winning ways, has an appeal you can bank on—with results you can bank! Weatheramic forced air heating and air conditioning units deliver every Utility advantage—high efficiency, a trouble-free life that reinforces your good reputation, and engineering that anticipates tomorrow's functional design and solves yesterday's installation problems. Weatheramic by Utility!

Weatheramic

UTILITY

FORCED AIR FURNACES/AIR CONDITIONERS

UTILITY APPLIANCE CORPORATION 4051 south alameda street, los angeles 58, california

Why don't you sell your customers on Follansbee Terne?

A Roofing and Sheet Metal Contractor in one of the large cities has sold a majority of the project builders in his area on using Follansbee Terne for gutter and conductor. In doing so, he has increased his profits and provided a better home for the builder and owner.

Here's why he was able to make the Sales:

1. Terne is Longer Lasting—adding another quality feature to the home at a minimum increase in cost.

2. Terne will hold paint—paint makes a better bond with Terne's lead coating. It does not need to be treated and does not need to be weathered—in fact, it should be painted immediately.

3. Terne is Economical—Although it costs slightly more than the cheapest materials, it is the economical buy.

Here's why you'll like Terne:

1. Terne is Easy to Solder—The tin-lead alloy coating forms a perfect joint.

2. Terne is Easy to Work—Terne is more ductile—easy to form and handle—and will cut installation time and cost for you.

3. Terne Comes in Ten Different Widths—It is readily available in any width you need.

So, if you want to increase your profits and give your customers a better, permanent job, why don't you sell your customers Follansbee Terne?

FOLLANSBEE

STEEL CORPORATION

FOLLANSBEE, WEST VIRGINIA

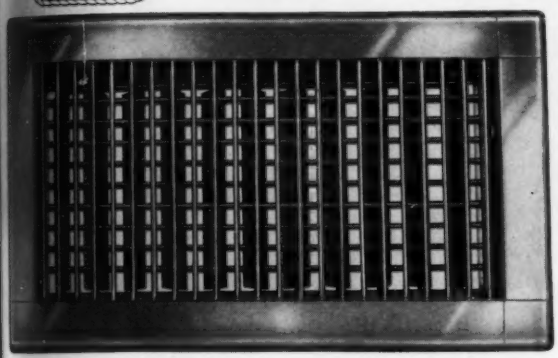
Cold Rolled Strip • Terne Roll Roofing • Polished Blue Sheets and Coils

Sales Offices in Principal Cities

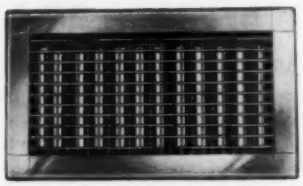
NOW AVAILABLE

The IDEAL REGISTERS and GRILLES For COMMERCIAL TYPE INSTALLATIONS!

TRIPL-*AIRE*



No. 92VHV — vertical front bars, horizontal second bank bars, vertical louvers.

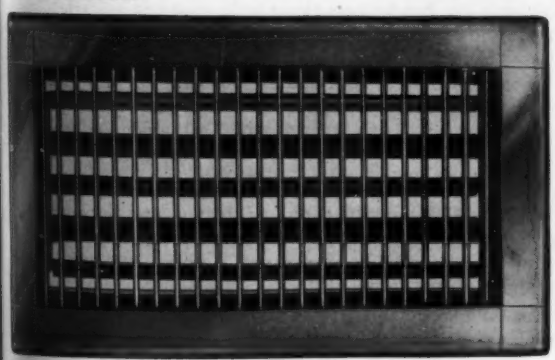


No. 92HVV — horizontal front bars, vertical second bank bars, vertical louvers.

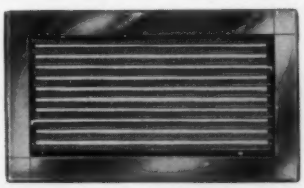
H & C TRIPL-*AIRE*

registers are superbly designed to give you any deflection or combination of deflections in both the vertical and horizontal planes that you could possibly desire. They are available in 26 standard sizes, up to 36″ x 36″ . . . each in 10 possible combinations. Opposed louvers provide absolute volume control with equal distribution of airflow to all parts of the face. Adjustment of both bars and louvers is done from the front of register. Standard finish is our exceptionally fine new "Decorator Gray" enamel. For complete details, consult your H&C Jobbers or our current catalog, "A".

FIXT-*AIRE*



No. 93V — Vertical front bars, set straight horizontal louvers.



No. 94A — Horizontal face bars set at 22° angle for up or down deflection.

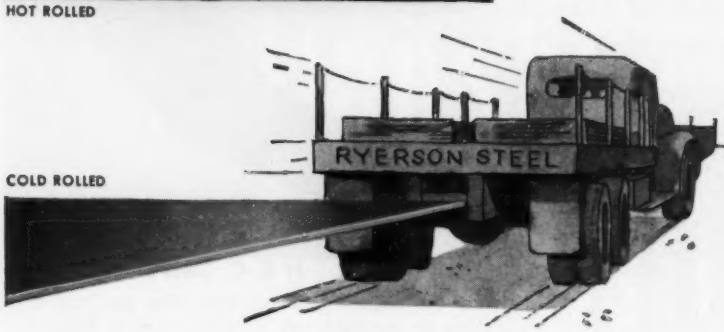
H & C FIXT-*AIRE*

registers in general construction are similar to the Tripl-aire line. They have the same highly effective, volume control, opposed louvers, but face bars (single bank) are fixed in either straight horizontal or vertical position. Grilles, however, may be had with horizontal face bars set at a 22° angle for up or down deflection, if so desired. Maximum one-piece size: 36″ x 30″. These Return Air Registers and Grilles are perfect companion pieces to those in the Tripl-aire line.

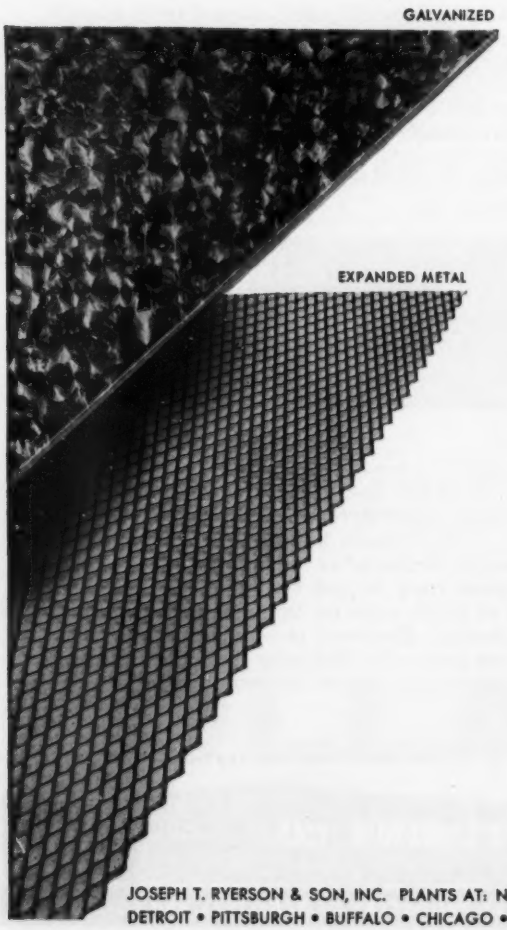
Write for your copy of our new Catalog "A" if your Jobber can not supply you with one.

HART & COOLEY MANUFACTURING CO. HOLLAND, MICH.

PRODUCT OF THE WORLD'S LARGEST and MOST PROGRESSIVE PRODUCERS OF REGISTERS and GRILLES



Sheets Quickly



more than 20 kinds in stock

You get the sheets you need without delay when you call your nearby Ryerson plant. That's because we carry the world's largest stocks—an unusually wide range of gauges and pattern sizes in more than 20 types. Whether you need a single sheet or a truck-load, pattern size or cut-to-order, we can assure you of immediate delivery.

Ryerson galvanized sheets are a special tight-coated type that form readily without peeling or flaking—are bright and clean with uniform spangle. Workable Ryerson stainless is all time-tested Allegheny Metal, with the high quality finish that will please your most particular customers. Ry-Ex Expanded Metal is available in two types, standard and flattened, both types with all sharp edges removed.

MACHINERY AND TOOLS. And when you need metal-working machinery or tools, again you can depend on Ryerson. Your nearby Ryerson plant supplies —and unreservedly guarantees—every type used by sheet metal shops.

So, for fast action on your every requirement . . . call Ryerson.

RYERSON STEEL

Principal products: Carbon, alloy and stainless steel, bars and band iron, angles and channels (black and galvanized), welded and seamless tubing, plates, sheets and strip, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI • CLEVELAND DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

editorial

'This is the Last Hot Summer for Me'

IF ALL THE PEOPLE who said those words this year really meant them, the residential air conditioning business in 1956 will exceed the most optimistic predictions. We in the home air conditioning industry— dealers and manufacturers alike — should keep reminding the public of last summer's heat waves. And that we'll have them again next summer.

In looking at the records for recent years, it's pretty obvious that many parts of the country seem to be getting hotter summer weather — and a lot more of it. Whether this is due to shifts in the Arctic air masses affecting our weather here, "atomic explosions," or what, doesn't matter much. What does matter is that heat waves unnecessarily affect our comfort, efficiency, tempers, general well being, health — and life itself. We say "unnecessarily," because air conditioning is the perfect answer.

Let's look at a few reasons why an air conditioned home can mean so much to a family. The facts accumulated by the research staff working with the families living in the Austin, Tex., Air Conditioned Village show that adults living in an air conditioned home sleep an hour and twelve minutes longer per summer night than their neighbors in un-air conditioned homes. Children sleep 36 minutes longer in the air conditioned home than those living in an un-air conditioned building.

We've never heard any expression dealing with the quality of sleep but we are willing to believe that rest obtained in a controlled temperature is of a higher quality than rest snatched piecemeal in uncontrolled temperatures. Our personal experience leads us to advance the theory that persons sleeping in air conditioned homes are more rested than those sleeping the same length of time in temperatures experienced on summer nights in un-air conditioned homes.

Other points in favor of central air conditioning for residences are advanced by the Austin Village research staff. They have found that the wives feel more like preparing well balanced meals (40 percent more calories were served) and that the family enjoys its meals more in an air conditioned atmosphere. During hot weather, families in air conditioned residences entertained friends three times as often as did people living in un-air conditioned homes. As a whole, more time was spent at home as a family unit with the accompanying sense of security in children. Children slept better and longer at night and during afternoon naps, and there were no cases recorded of heat rash on infants.

These are sales points that can be used effectively to show that air conditioning the home is the best way to get the most out of living.

If we keep on hammering at them during the winter months, and keep on reminding our customers and prospects of last year's summer heat wave headlines, we'll not only contribute to the growth of this fascinating air conditioning market and our own business — we'll perform a most important public service as well.

Dealer's New Showroom Makes 'Em

STOP

LOOK

LISTEN

Addition of an arresting display area has attracted a new market previously untouched by the business — the walk-in trade consisting of passersby who are drawn into the showroom by the forceful displays and signs

Does an attractive showroom really pay off for an established sheet metal-heating-air conditioning firm?

Bob Struckman, vice president of Elgin Sheet Metal Co., Elgin, Ill., has a clear and unequivocal answer to the question:

"It surely does. We've been open only a month with our new front, so we can't produce a lot of figures to prove it. But we have to pay for the remodeling, so we are watching it pretty sharply. It definitely has improved sales already, in several ways."

Mr. Struckman is office manager of the firm. President Paul Hudgens, who does the estimating and outside selling, started the business some 20 years ago and in 1947 moved it to the present location on a busy highway.

Previously, the front of the building was at an angle to the street and had about 20 sq ft of show room. The company invested a substantial amount in modernization, adding a new 26 × 35 ft front which was devoted entirely to display space, and installing a year 'round air conditioning unit behind a door just inside the original building.

Showroom Lures Walk-in Trade

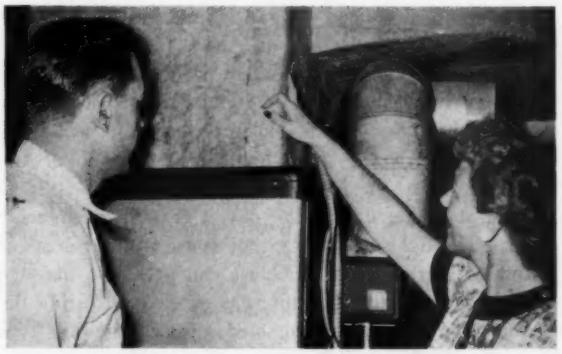
According to Mr. Struckman the move has been a real selling aid for both heating and air conditioning equipment and has made it easier to upgrade furnace sales to include air conditioning. It also has created a whole new dimension to the business—the walk-in trade which it never had before. "At least 75 percent of our sales used to be through telephone contacts," he says. "The customer never saw the shop. Most of our business came through recommendations or through newspaper or phone book advertising. They'd call, we'd go to the home and make a survey, turn in a proposal and then do the job. That's still going on, of course. But now there's the added walk-in trade—people who used to drive or walk by without even knowing what the firm had to offer. They are stopping now. Previously, people contacted us only after they were in need, and went to the trouble to call us. Now we're seeing them at an earlier stage, when they're merely speculating on a different heating plant, or on adding air conditioning. Now instead of an add-on cooling unit we are often able to sell them an entire new unit for a year 'round job."

In the one month the new display room has been in operation, inquiries on new equipment have increased an estimated 25 percent.

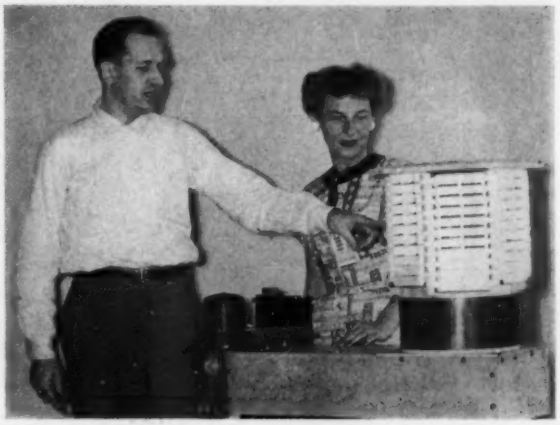
Trims Advertising Budget

Another advantage — one that influenced the firm's decision to remodel and add the display room — is, as Mr. Struckman sees it, the reduction in outlay for certain types of promotion. "Advertising costs kept creeping up on us," he reports. "We do quite a bit in the newspapers and phone book — we have to,

LITERATURE RACK, not needed previously, is now an important phase of the selling program



DIRECTLY RESPONSIBLE for three sales in the first month is the year 'round unit which serves the showroom and doubles as a demonstrator



WIDE OPEN display area sets stage for sales and demonstrations — in this case, of the radiant combustion chamber of a gas conversion burner

NEW ADDITION stands out from existing structure. Flush with street and with two glass walls, it's visible for several blocks

because about 75 percent of our work is residential. In the phone book we started out in one classification, where we took a quarter page in order to stand out. Pretty soon they pointed out that while we were under the Sheet Metal classification we were missing out under the Furnaces, Gas Heat and other headings. It kept snowballing, until pretty soon we had about six of these display ads, at a substantial cost.

"We reasoned that with our location on a busy street, the addition of a good display room with a spectacular sign might well alleviate the need for some of this type of promotion. We thought if we could develop the street traffic business, we could cut down on yellow page duplications. And it looks as though it will work out. We put a big sign high on the front of the building. The sign is generously lighted and is spectacular at night; during the day it is easily visible for blocks. The lights frame a center space which resembles a theater marquee, on which we can present a message which can be changed as often as necessary. During the summer, of course, we promoted air conditioning. This fall we will change it."

Inside the new display room everything is arranged to sell merchandise. Restraint was used in arranging the displays "to keep from confusing the customers" by trying to present too much equipment at the same time. Only three furnaces are displayed on the floor; there are a few baseboard units and gas conversion burners.

"We believe people like a little room," he says. "Here they can walk around the units, inspect them, kick them if they want to. We have room to take the panels off and set them aside while we show the interiors. It makes it easy to talk and easy to sell. Our heating units are along one glass wall of the building; conversion burners are along the front. All day we see people stopping to look at the equipment and to read the signs on it. There's no confusion. It's direct and simple: We sell comfort.

FACING AND UNDERSIDE of canopy, as well as all window trim were fashioned in the company's shop, making the entire showroom a demonstration of the firm's work

Cooling Demonstration Boosts Sales

Best of all is the actual air conditioning unit which cools the display room. It's one thing to talk about cooling their houses, it's quite another thing to show them. Many people are walking in here now, and nearly all of them remark about how comfortable it is. When they do we tell them what kind of a unit we are using and we offer to show it to them.

"In the one month, we have sold three of these units with this demonstration alone, to customers we might never have met if we hadn't had the display room.

"The addition sells in still another way — through the printed word. We have a big rack now for manufacturers' literature, which would have been superfluous before. The pictures and descriptions in those folders are very valuable in backing up a sales talk.

"In addition, we can show them actual work turned out by our sheet metal shop. We did the facings on our canopy in 26 gage, type 302, no. 4 finish stainless steel. The soffit underneath the canopy is 24 gage galvanized steel, broken into a pattern in the shop and painted white. All the window trim is 24 gage, 302, in a *2B* finish done here in the shop.

"Everything connected with the addition serves as a sales aid. We're convinced that the increased sales volume and reduced selling expense will make the investment worthwhile."

Test Results Show How to Eliminate Critical Draft Areas

Reasonable comfort is defined in terms of maximum allowable air movement, maximum vertical air temperature difference, and the probability of objectionable drafts for five residential air distribution systems

By Alfred Koestel* and G. L. Tuve**

THE OBJECT of the designer of an air distribution system is to provide ventilation for an occupied space and to absorb heating and cooling loads. This result must be accomplished without drafts or excessive local air velocities anywhere in the occupied zones. A general method of analysis of air distribution systems for small rooms is offered in this paper which is the result of research sponsored by the American Society of Heating and Air-Conditioning Engineers, Inc. in cooperation with Case Institute of Technology, Cleveland, and presented at the semi-annual meeting, June 29, 1955, in San Francisco.

In the early development of systems for both heating and cooling by air, it was common to use large temperature differences between the supply air and the room air and to pay little attention to air distribution. The adverse comfort conditions of such systems are now recognized. But when low temperature differences and large air volumes are used, the problem of drafts becomes very important.

This discussion attempts to establish a method for determining optimum comfort conditions for high volume convection systems. Special attention is paid to heating with low supply air temperatures, as in heat pump applications.

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**Professor of Mechanical Engineering, Case Institute of Technology. Member of ASHAE.

Evaluation Criteria

Available data on health and comfort are insufficient to give a fully satisfactory basis for evaluating room-air conditions. In this paper the findings of Houghten and his associates and the proposals of Rydberg and Norback were used for the evaluation of effective temperatures and drafts.

One criterion of good air distribution is a uniform feeling of warmth throughout the occupied zone, *i.e.*, uniform effective temperature due to dry bulb and air velocity. A physiological sensation (change in skin temperature) caused by a change in local effective temperature is therefore called a *draft*. Excessive local air velocities may also be in themselves objectionable, causing movement of the hair, eye discomfort, disturbance of papers or fabrics or directional movement of smoke. In any case it is recognized that objectionability or tolerability are statistical with respect to the occupants. Each given condition will result in a certain percentage of objections, and it is very difficult to produce any condition that is voted satisfactory by all occupants.

Dry bulb temperature and air motion are the only conditions taken into account in the present evaluation. Humidity is disregarded because extremes of humidity are uncommon in properly conditioned rooms. The mean radiant temperature of all enclosing surfaces is assumed to be within a few degrees of the air temperature in the occupied zone. This is the actual case in most well constructed buildings served by air distribution systems. Radiant heating and cooling are considered to be methods of absorbing a portion of the thermal load and of compensating for extremes of room surface temperature due to weather and solar effects.

Variables for Ideal System

An actual system of air distribution is too complex for direct analysis, but by means of simplifying assumptions an ideal or theoretical model may be attained. Such a model will reveal the significant variables and thus act as a guide for the experimental attack and presentation. Consider a system in which the following assumptions apply:

1) An ordinary convection system serves an independent room in a well-insulated structure.

2) The mean radiant temperature of room surfaces approximates the air temperature, *i.e.*, radiant effects are small compared with convection.

3) Indoor relative humidities are normal, without extremes.

4) At each test condition the sys-

tem is in equilibrium, and maximum comfort is attained at the control point in the middle of the room.

5) Inertia forces predominate as compared with buoyant forces, *i.e.*, the circulation in the occupied zone is mainly by forced convection rather than by natural convection.

6) In the unoccupied zone, adjacent to exposed surfaces, natural convection is important.

7) Differences between heating and cooling will exist.

Based on these assumptions and on the available comfort data, the following theory has been evolved to describe the performance of a room air distribution system with forced convection:

1) At any given point in the occupied zone, the magnitude of the air velocity is a function of the flow rate at the supply openings.

2) The vector direction of the air velocities in a room, *i.e.*, the flow pattern, is a function of the room configuration and of the type and location of the distribution system. There may be a difference between heating and cooling.

3) The percentage of occupants who will object to a local draft depends on the departure of the local effective temperature from that at the control point.

4) The local dry bulb temperature difference at any point in the air flow pattern depends on the supply-air temperature difference only, and is independent of normal changes in the air flow rate.

5) For a given room, served by a given system, there is one air flow rate and supply temperature that will result in minimum draft.

Experimental Procedure

The test room was 18 × 13 × 8 ft, built to simulate a well insulated living room with two exposed walls and windows, insulated unheated attic, and an insulated floor with ventilated crawl space. Conventional furniture was not present. The 18 ft exposed wall included a 10 × 6 ft simulated double glass picture window and two 5 × 4 ft simulated double glass windows were located on the 13 ft exposed wall. An outdoor space was provided on the two exposed walls as well as above and below the room. Air pressure differences between the test room and outdoor space, and test room and laboratory were reduced to a minimum by damper control. This eliminated any extraneous air infiltrations or exfiltrations. Infiltration air from the outdoor space was metered into the test room from perforated panels located on each side of the picture window. Air was supplied to the air distribution outlets from a separate plenum chamber.

Typical heat losses were obtained by designing the exposed surface of the test room for the same interior surface temperatures encountered in a typical well insulated house. When an outdoor space temperature simulating 8 F outdoors was maintained, the following typical test room conditions were noted:

1) Room control temperature (center of room at the 30 in. level): 73 F.

2) Infiltration heat loss: 500 to 650 Btuh.

3) Total register heat input: 5000 to 7000 Btuh depending on air change and type of air distribution system.

4) Total heat loss (fixed internal heat gain from lights and occupants of 1000 Btuh plus register heat input): 6000 to 8000 Btuh.

The occupied zone of the test room was defined as being enclosed by surfaces 1 ft from the walls and 6 ft, 2 in. from the floor, The boundaries of the occupied zone were marked by a grid consisting of strings arranged in 6 in. squares with calibrated air movement indicating threads in each square.

Table 1 and Figs. 1, 2, 3 and 4 provide a description of the five air distribution systems tested.

Air Supply Measured

For each system of air distribution and for each constant outdoor

TABLE 1—AIR DISTRIBUTION systems in an 18 × 13 × 8 ft test room

Designation in Figures	Air Distribution System	No. of Outlets	Size of Outlet	Location of Air Distribution Outlets
1	High Side Wall Outlets	2	12 in. × 6 in. approximately 48 sq in. free area per outlet. The vertical bars were set to produce a uniform total spread of 60 deg in the outflowing air	High on the inside wall opposite the picture window with their centers one foot from the ceiling and one quarter of the length of the room from the adjacent walls.
2	Baseboard Diffusers	3	30 in. in length 4½ in. in height approximately 26.5 sq in. free area	Two of the three baseboard diffusers were located adjacent to the floor on the exposed wall containing the picture window and one quarter of the length of the room from the adjacent walls. The third baseboard diffuser was located adjacent to the floor and centered on the exposed wall containing two 4 × 5 ft windows.
3	Ceiling Diffusers (Flush Cone Type)	2	7 in. neck diameter	Centrally located each in a 9 × 13 ft rectangle which constituted one-half of the ceiling area.
4	Ceiling Diffusers (Projecting Cone Type)	2	6 in. neck diameter	Centrally located each in a 9 × 13 ft rectangle which constituted one half of the ceiling area.
	Perforated Acoustical Baffles as Air Diffusion Outlets*	2 to 5	4 ft long by 6 in. in height approximately 1 sq ft of free area and 4 sq ft of gross surface area	A complete baffle system was installed. The five baffles nearest to the cold walls were fitted with air supply ducts and the number of baffles tested were varied from 2 to 5.

*NOTE: Wedge shaped perforated aluminum trough filled with a glass fiber core for sound absorption used in connection with luminous ceiling.
Three 8 × 18 in. returns individually tested with all systems of air distribution. One return was located low on the inside wall opposite the picture window, another low on the exposed wall below the picture window, and the third high on the inside wall near the corner formed by the two inside walls. When testing a given system, all air distribution outlets were balanced to deliver equal amounts of warm air.

temperature, air was introduced at various temperatures into the test room. The quantity of air in each case was that required to maintain the room control temperature at 73 F. The supply duct dampers were adjusted so that for each system of air distribution the outlets were balanced and delivered equal quantities of air. This was repeated for different outdoor temperatures.

Test Procedures and Results

After equilibrium had been obtained for each set of conditions, air distribution measurements were made on the grid. Since only the regions on the grid having critical draft conditions were considered important, these regions were located and probed with calibrated anemometers and temperature measuring instruments. This technique limited draft measurements in the room air flow pattern to the boundaries of the occupied zone where the draft would always be most objectionable.

In conjunction with the air temperature and air velocity measurements in the critical draft regions, the following data was obtained:

1) Temperatures on exposed walls, windows, ceiling and floor.

2) Register and return air temperatures and air flow rates.

3) Outdoor space temperatures.

4) Quantity and temperature of infiltration air.

5) Vertical air temperature gradients throughout the occupied zone.

Three returns were separately tested in order to determine the effect of return location on the air and temperature distribution.

Anemometer measurements were made by several methods: 1) from angular deflections of calibrated air movement-indicating threads; 2) by commercial heated-thermocouple anemometers; 3) by heated thermometer anemometer; 4) by heated thermocouple anemometer.

Provisions were made to measure the floor to ceiling air temperature gradients at various positions in the occupied zone by means of thermocouples on vertical poles. Both thermocouples and thermometers were used as temperature probes in the critical draft regions.

The results obtained from the tests for room heating are presented graphically to illustrate the general behavior of an air distribution system. These results apply when low returns are used except that high returns may also be used in the system shown in Fig. 2.

The air velocities in the critical draft regions of the occupied zone plotted as a function of air flow rate or air change are shown in Fig. 5.

For a given room heat load, as the room air velocities increase with air change, the air temperature differences in the critical draft regions with reference to the control temperature decrease as shown in Fig. 5.

The degree of draft in the critical draft region with respect to the control point and as measured by the effective temperature difference is plotted in Fig. 5. If the air temperature in the critical draft region is above the control point temperature, a no draft condition can be obtained. If the air temperature is below the control point temperature, a minimum draft condition will result as shown in Fig. 5.

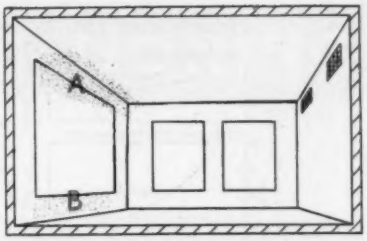
The probable percentage of occupants who would object to the draft in the critical draft region in accordance with Houghten's findings is shown in Fig. 5. Note that the general trend of the objectionability curve is similar to the curve of effective temperature difference.

In Fig. 6 are plotted the supply-air temperature and return air temperature as a function of air change.

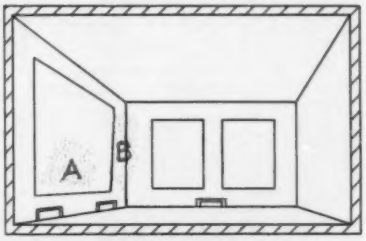
Effect of Return Location

Each air distribution system was tested with three different locations of the single return.

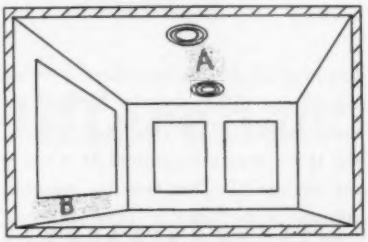
For each system the return location was changed and the outdoor temperature maintained constant. The heat input was adjusted to maintain the same room control temperature for each run. 1) For the baseboard diffuser system there was no significant difference in gradient, return temperature, register temperature or heat input for any of these locations of the return. 2)



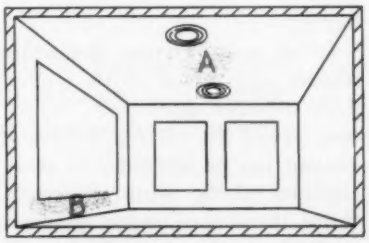
1 CRITICAL DRAFT areas (A and B) were found for high sidewall register locations



2 BASEBOARD DIFFUSER system must overcome drafts in the areas marked A and B

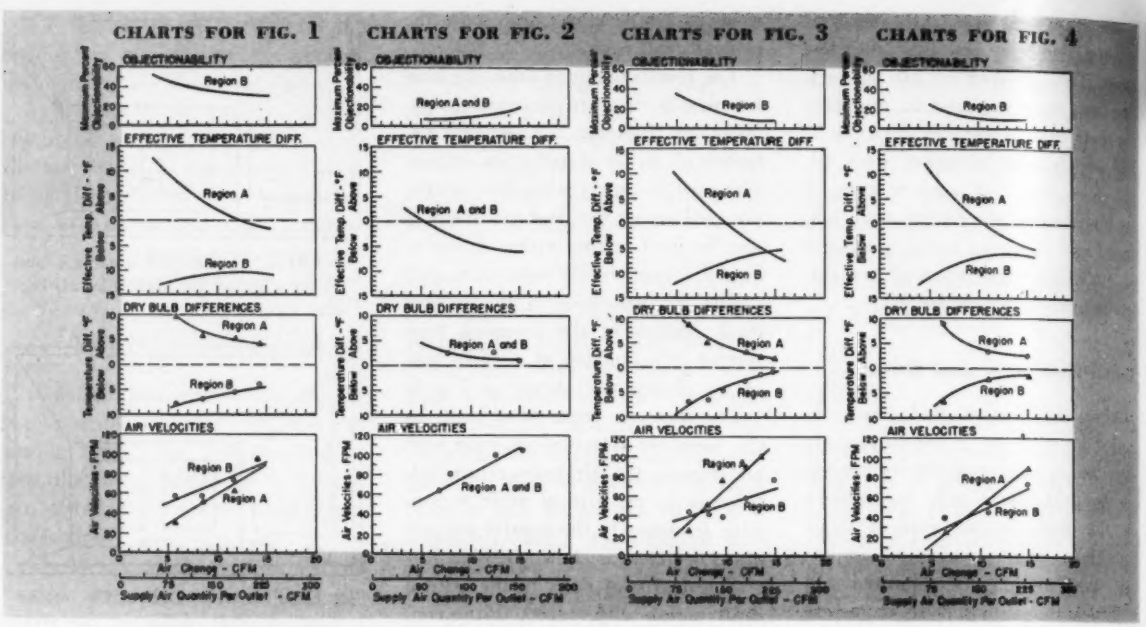


3 CEILING DIFFUSERS of the flush cone type encounter drafts at areas A & B



4 DRAFT AREAS for projecting cone type of ceiling diffusers are at areas A and B

With the high sidewall outlets at 12 air changes there was little difference between the two low returns but with the high return, the register temperature, return temperature and vertical air temperature gradients were all considerably higher. 3) With the acoustical baffles appreciable increases in vertical air temperature gradients were noted with the high return. 4) With the ceiling dif-



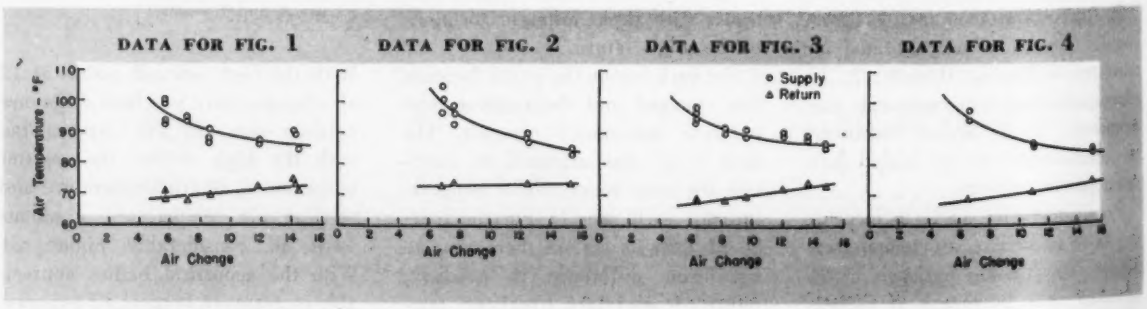
5 AIR AND COMFORT CONDITIONS are shown as found for the four air distribution systems described in Figs. 1, 2, 3, 4

fusers at 15 air changes there were no significant differences in vertical air temperature or air velocities between the three return locations. At a lower air change of 6 the two low sidewall returns gave similar performances, but with the high sidewall return the supply temperature, return temperature and vertical air temperature gradients were all considerably higher.

In all tests, varying the return location did not affect the critical draft velocities appreciably. The effects caused by varying the return location can be attributed to short-circuiting of the warm air supply. If the distribution system produces small temperature gradients with floor returns the temperature of the air entering the return is relatively independent of the return location. If, however, the gradients are large with floor returns, mixing is incomplete and changing to a ceiling return will result in withdrawing air at a temperature above the normal room temperature. Since mixing is poor, (evidenced by the high gradient with floor returns), the withdrawing of the warm air near the ceiling will aggravate the situation, resulting in increased gradients, return temperature, register temperature and heat input.

The following conclusions apply to the type of installation under consideration; *i.e.*, a high volume system for heating a typical living room in a well-insulated residence, and to the air distribution systems tested.

Theory predicted that air velocities in the occupied zone would be proportional to the velocity at the supply outlets, and this was verified by all tests except those using perforated baffles for air supply. In other words, for the common types of registers, diffusers and baseboard slots used in residential heating, the pattern of air distribution is fixed by the geometry of the room and system, and the air velocities change with the volume of air circulated. For a given supply temperature the room air velocities vary with the indoor-outdoor temperature difference.



6 SUPPLY AND RETURN air temperatures based upon air flow rates for distribution systems described in Figs. 1, 2, 3, 4 and indicated on each chart by the roman numerals for the related figure

Engineering

Installing

Servicing

Flexibility Makes the Difference In Heating-Cooling Combinations

A review of the characteristics of parallel, series and combination arrangements with regard to air flow will enable the dealer to get the most out of his year 'round installations

By S. W. Reid

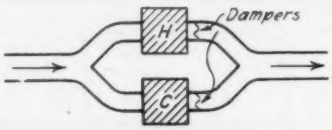
Air Conditioning Engineer
Gilbert Associates, Inc.

ANYONE LOOKING FOR an opportunity to exercise his ingenuity can find it in the application of air conditioning — particularly, residential air conditioning. Ingenuity is defined as "skill in combining" or "cleverness of design." The air conditioning dealer must rely on it to varying degrees for the solution to many of his application problems. Rarely are any two alike, and even when they are, their solutions are often different, to the extent that they usually reflect certain improvements.

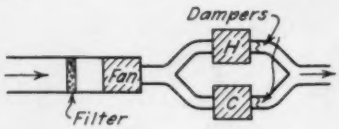
A pattern of application practice is gradually taking form, which the dealer might well use as a guidepost in finding his way toward solving new problems. An important part of the pattern is the manner in which heating and cooling elements are combined in residences; it is this part we emphasize in this article.

To perceive the pattern it is necessary to select certain characteristics common to various types of installations, and classify them in some orderly manner. For instance, in all year 'round systems the heating and cooling elements are in parallel, in series, or in a series-parallel relationship with respect to air flow. Recognizing these three broad categories, we proceed to list under each a number of variations, each of which may be further classified by more precise definition. Thus, of the systems de-

Heating and Cooling Elements in Parallel

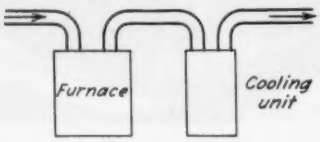


Heating and cooling units are entirely independent, each with its own fan and filter

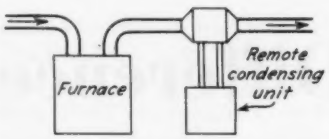


Heating and cooling elements have common fan and filter (single year 'round unit)

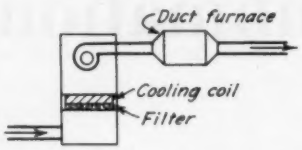
Heating and Cooling Elements in Series



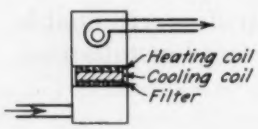
Direct fired furnace is connected to factory assembled cooling package



Direct fired furnace (including fan and filters) has cooling coil in supply duct

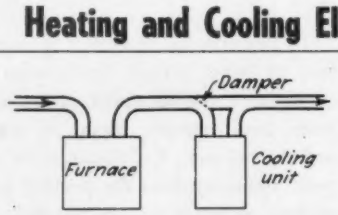


Self contained air conditioner has a direct fired duct heater

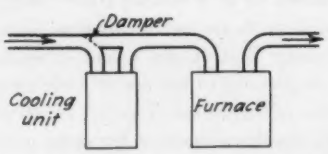


Self contained air conditioner has steam heating coil

Heating and Cooling Elements in Series-Parallel



Cooling unit in furnace discharge duct is bypassed in winter



Cooling unit in furnace intake duct is bypassed in winter

signed for series air flow through the conditioning elements we could place some in a category where the heating element is contacted first and others in a category where the cooling element is contacted first.

In the parallel category fall the systems in which air is circulated through either the heating element or the cooling element, but not through both at the same time. The most elementary arrangement of this type might be a complete air conditioner, including its own fan and filter, connected in parallel to a complete warm air furnace with its own fan and filter. Either unit operates entirely independently of the other, and the unit not being used is dampered off from the active part of the duct system.

Many Variations Possible

Many variations of this arrangement are possible, the most compact being the factory built "package" containing complete heating and cooling units in a single cabinet with one fan, one filter, and a built in damper.

Characteristic of the parallel arrangement is the changeover damper which directs the air through either the heating element or the cooling element. The changeover can be manual or automatic. The latter employs an electric damper motor energized by a remote low voltage selector switch. When a diverting damper is used, an interlocking switch is incorporated into the control wiring so the heating circuit is broken when the damper is in position for operation of the cooling unit and vice versa. The switch should break both circuits unless the damper is fully seated in either position to guard against recirculation. Recirculation over the cooling coil would not only reduce capacity but might eventually cause compressor or motor damage due to short cycling on the low pressure cutout. Recirculation through the furnace could also reduce capacity and could cause overheating or at least, short cycling on the temperature limit control.

A second characteristic of the

parallel arrangement is that it offers a chance to design for two different air volumes, one for summer and one for winter. While it is often possible to reconcile a constant air flow for both the cooling and heating functions, there are cases where a seasonal change is desirable.

Where two blowers are used, it is, of course, possible to operate them at different speeds and so obtain the most desirable air quantity for each season. In studying the feasability of two different air flows the dealer must be sure the duct and distribution system can operate quietly with the higher cfm. This is especially true where an existing heating system is being converted to year 'round service.

Where only one blower is used, the designer must take into consideration the relative restrictions of the particular furnace and air conditioner in estimating what the air flow through each will be. Because the cooling coil usually offers more resistance than the furnace it would be expected that the greater volume would be obtained during the heating cycle. Since the blower must be selected to produce the desired flow through the element of greatest restriction, it may be necessary to introduce external resistance in the form of a volume damper in the heating circuit to establish the proper heating cfm.

The Series Arrangement

Our next consideration is of those systems wherein the heating and cooling elements are in series with respect to the flow of air through them. There are a number of equipment variations, all of which fall into this category. For instance, the air conditioner with its built-in steam or hot water heating coil is a series arrangement. Such a year 'round unit might be installed as part of a split system arrangement in an existing house with "wet" heating. Radiation could be left undisturbed in those rooms not to be air conditioned. In the conditioned spaces however, radiators could be removed, if the owner so desired, and replaced with warm air heat from the central unit heating coil.

A more common series arrangement involves direct fired heating equipment. The combination of a complete (including fan and filter) self contained cooling unit with an externally mounted duct heater is found in many southern homes where heating requirements are light. Going to the other extreme we find the combination of a complete (including fan and filter) warm air furnace used with an externally mounted cooling coil inserted in the supply duct. The cooling coil is refrigerated by a remote condensing unit. Between these two arrangements are combinations made up by connecting complete furnaces and packaged cooling equipment with duct work. Factory assembled year 'round units housing both heating and cooling components in one compact casing may also be in this category if the air flows through their heating and cooling elements in series.

Although it is possible to have different air volumes for summer and winter air conditioning by a seasonal change of the blower speed or by means of a throttling damper in the duct, the series arrangement has been used quite successfully with a constant year 'round air quantity. This is possible because the air quantity for both heating and cooling equipment can be selected within a reasonably wide latitude without any serious effect upon capacity. There are, of course, limitations. Flow over a cooling coil should fall between 300 and 420 cfm per ton. Flow through a direct fired furnace should result in a temperature rise between 70 and 100 F.

Spot Cooling Coil Downstream?

Whenever residential air conditioning is discussed, the problem of accelerated rusting of the furnace heat exchanger often comes up. The consensus seems to be that the cooling coil should not be located on the intake side of the furnace unless the furnace heat exchanger is stainless steel or enameled and resists corrosion.

Many installations of this type have been made, particularly where cooling is added to an existing system. The reason is that it is usually easier to insert the cooling unit on the return side than on the supply side of the furnace. Supply branches in many cases leave directly from the plenum, whereas return air generally is collected in a single trunk which carries it back to the furnace.

Even though the best advice is to the contrary, it would seem that the dealer could be guided by his own experience and that of other dealers in his territory in deciding whether the upstream cooling coil location is advisable. Certainly, local weather conditions have a big influence upon what the results will be.

Generally speaking, the system with the cooling and heating elements in series is simpler than the parallel

A SPECIAL SERIES

. . . of articles of interest to the residential air conditioning dealer is based on the author's wide experience in the field. The discussions began with consideration of the fundamentals and operating characteristics of residential cooling units, then turned to specific problems, service and installation techniques. Earlier articles have treated such contemporary subjects as types and characteristics of refrigerants, lubrication, charging and trouble shooting procedures, managerial problems, installation techniques, modernization and zoning.

CONTINUING THE APPROACH

. . . we will investigate more of the cooling dealer's problems, analyzing subjects such as liquid and suction line sizing, blower operation in summer and winter, and cooling problems in an old two story house.

arrangement from several standpoints. The control scheme is less involved than that required for a parallel system with its necessary damper for seasonal changeover. Duct connections to the equipment are simpler unless the parallel installation is made using a single year 'round package with a built-in diverting damper.

The series arrangement has several characteristics which might or might not be considered disadvantages. One, which has already been discussed, is the use of the same air flow for both heating and cooling. This would be an advantage if the chosen air flow falls well within the tolerance allowed for each function. It is possible, however, for the chosen rate of air circulation to represent a rather severe compromise with respect to either heating or cooling, in which case a fixed air quantity might be considered a disadvantage. There are means for overcoming this problem of course, as we discussed previously.

A second characteristic which might be of consequence, in which case it would be a disadvantage, is the fact that the blower must always handle the given air quantity against the static resistance pressure of both the heating and cooling elements and its operating cost consequently may be somewhat higher in the winter than it would be were the blower moving air through the heating unit alone.

Combination Utilizes Damper

The third broad classification of year 'round residential installations is one wherein the heating and cooling elements have a series-parallel relationship. The typical arrangement of this type has a damper which is used seasonally to place the elements in series for the cooling cycle and in parallel for the heating cycle. In other words, during the heating cycle the air bypasses the cooling coil. Just as with the pure parallel and pure series arrangements, the series-parallel arrangement can be built up in several different ways. For instance, the cooling unit may be added to an existing heating plant by introducing it in either the intake or the discharge duct of the furnace. In the former case the furnace fan would pull through the cooling coil and blow through the furnace during the cooling cycle. In the latter case the fan would blow through the furnace and then the cooling coil. In either case a bypass duct and damper would remove the cooling coil from the air stream during heating.

When the series-parallel arrangement is used, air volume may become a problem. The reason is that the blower must operate against the greatest system resistance during the cooling cycle since it must move air through both the cooling and heating elements. Unless the bypass around the coil has the same resistance as the coil, the system resistance will be lower for the heating cycle and a greater volume of air will be handled. Although this may be acceptable in some cases, the respective loads usually work out so less air is needed for heating than cooling.

If this condition exists, several corrective measures are possible. One is to reduce the blower speed for the heating cycle. Although this procedure would also result in a savings in fan power, it may not be practical since cooling might be needed occasionally after the change had been made. In addition, few home owners would be interested in making such a change themselves. A more practical solution is to place an adjustable air volume damper in the bypass to regulate the heating cfm as desired.

The series-parallel arrangement using the furnace blower and installing the cooling unit on the intake side of the furnace would make a rather cumbersome arrangement with respect to the filters unless they were mounted independently from either unit in the return duct. Otherwise it would be necessary to have two sets of filters. One set would be in the air conditioner, the other in the furnace. The furnace filters would not be needed for the cooling cycle and could be removed.

Up to this point we have examined briefly that part of the residential air conditioning application pattern having to do with the relationship of the heating and cooling elements. The word "element" was used advisedly with reference to the cooling system in order to distinguish the cooling coil from the condensing unit. The latter has been given a lot of special attention by designers of residential equipment. It would seem important, therefore, to consider some of the coil-condensing unit relationships.

Which Condensing Unit Is Best?

There are, of course, three broad classifications for condensing units with respect to the condensing medium. These might be listed as follows;

1) Air cooled condensing units.
2) Water cooled condensing units.
   a) Water is obtained from wells or city mains.
   b) Water is obtained from cooling tower.
3) Evaporatively cooled condensing units.

In one or more of the categories the dealer will find:

1) Refrigerant circuits wherein the coil and condensing unit are factory assembled as a complete system.

More on Register Location

AMONG THE comments received on author Reid's September article, Planned Air Distribution Pays Off in Comfort, was this additional advice from C. J. Pearson, vice president of United States Register Co. He writes:

"An adjustable bar grille in ceiling locations would prevent dumping the air on top of the occupants' heads. On interior walls, registers can be located in or anyplace above the baseboard and can be flexible enough so that with a twist of a small tool, grille bars can be adjusted for an up flow of 60 deg for summer cooling and a straight or down flow for heating. This means registers in the average home could be changed from summer cooling to winter warming in about ten minutes.

a) Assembly is designed to fit inside furnace casing. (Entire assembly may be removable.)

b) Assembly casing is correlated to furnace design.

c) Assembly casing is independent of any furnace design.

2) Refrigerant circuits wherein the coil, condensing unit, and connecting lines are factory matched and prepared for immediate field connection without field evacuation and charging.

a) Coil assembly is designed for mounting in matching furnace. Condensing unit may be located anywhere within range of connecting lines.

b) Coil assembly complete with drain pan is designed for duct mounting. Condensing unit may be located anywhere within range of connecting lines.

3) Refrigerant circuits wherein the coil, condensing unit and all other system components are dealer-selected and field assembled, evacuated and charged.

It is not our purpose here to discuss the relative advantages of the different condensing methods, which have been covered in previous articles in this series. We are interested however, in the physical relationships between coils and condensing units being offered today since they are closely allied to our broader subject, the relationship of the heating and cooling elements.

It would seem that, everything being equal, a refrigerant circuit in category 1*a* offers the ultimate in year 'round residential conditioning today, especially if the entire circuit can be easily removed from the casing. Such a circuit offers the advantage of factory sealing and testing. It is mounted with the furnace in a common casing. One manufacturer therefore, has the responsibility for proper matching of the blower to summer and winter duty and for proper and efficient changeover dampers. If the refrigerant assembly is readily removable, there should be no prolonged inconvenience to the homeowner while he waits for new parts. The entire assembly can be quickly replaced, if required, while the defective assembly is taken to a shop or returned to the manufacturer for repair.

Refrigerant circuits in categories 1*b* and 1*c* appeal to this writer in the order listed for the reason that the former have been pre-engineered to match heating equipment not only in performance but also in appearance. Equipment in category 1*b* has the advantage of one responsibility with respect to manufacture whereas that in 1*c* does not necessarily have this.

Consider Flexibility Features

Refrigerant circuits in category 2 provide a very flexible arrangement with respect to the relative locations of the coil and condensing unit. This is essential for certain tight installations that perhaps could not be made with any other type of equipment, and it is especially useful for air cooled condensers that must be located so they can receive and exhaust outside air.

Circuits in 2*a* have a slight advantage over those in 2*b* in being pre-engineered to match the heating equipment with which they will be used, again not only for performance but also for appearance.

It should be noted that equipment in category 2 requires no field evacuation or charging. The condensing unit is shipped with the proper charge, and the coil and connecting lines are factory prepared so it is necessary for the dealer only to make the connections at the time of installation.

Category 3 was included to round out the picture. Early residential systems were made up in this manner because packaged equipment was not available. Today's dealer should not overlook field assembled systems, however — there are still problems that packaged equipment will not solve. With modern hermetic condensing units and other components which are manufactured to high standards of quality, the field assembled circuit, well designed and of good workmanship, can be every bit as reliable as one built in a factory.

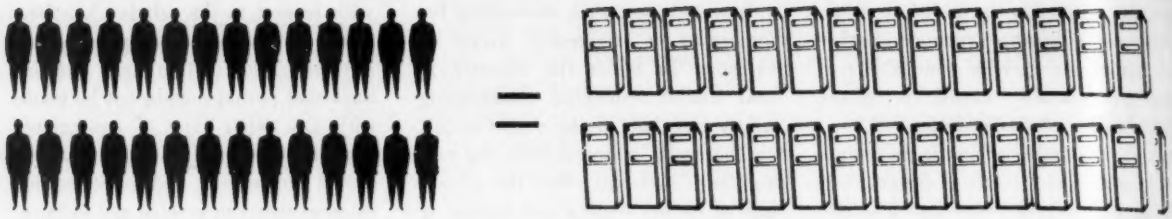
Punch and Die Set Saves Shop Time

THE FABRICATION of stainless steel sinks for hospital and cafeteria kitchens has become a standard item in the shop of Walker Jamar, Duluth, Minn. The usual problem of counter sinking the drain outlet has been solved by the use of a special die and punch set.

The location of the drain is marked on the 14 gage metal which is placed over the die. The die is placed in the lower jaw of a punch press. The punch is placed in the upper jaw and adjusted against the marked point. Operation of the press causes the punch to cut out a smooth edged opening at the same time evenly countersinking the drain opening.

The die was designed by Louis Surman with the aid of shop superintendent Arthur A. Carlson who says the work involved in developing the die and punch was well worth while. Previously the time consuming job of reaming the drain opening and hammering the countersink took much longer and never resulted in the neatness now obtainable with the punch and die set.

LOUIS SURMAN SHOWS the punch and die set used to countersink drain openings in stainless steel sinks to Arthur A. Carlson (left)



26 Key Dealers **sold** **2813 Furnaces**

DURING 1954, warm air heating dealers of Lucas County, O. sold 3758 furnaces, of which 2813 were sold by 26 key dealers (22 percent of the total licensed to do business in the area). These key dealers accounted for 75 percent of the total sales

Here's a Factual Report on

Furnace Sales in the Toledo Area

Are you getting your share of the warm air furnace business in your area? American Artisan's study of furnace sales in the Lucas County, O., area may help you find out, since this area is typical of many throughout the country. The methods used here can be adapted to any area

WARM AIR HEATING DEALERS throughout the country are interested in marketing data for the areas in which they are operating. A study of the number and kind of furnaces sold in a given year can tell a dealer whether or not he is getting his share of the business, and whether or not he is one of the key dealers.

The city of Toledo, located in Lucas county, O., has a heating ordinance which requires licenses and permits for the installation of heating equipment. Similarly, the Lucas county heating ordinance, which is applicable to the county area outside of Toledo, also requires licenses and permits for the installation of heating equipment.

With the cooperation of the city of Toledo and the Lucas county divisions of inspection and warm air heating inspectors, American Artisan has tabulated permit and license record data on type of equipment, installer, and make of furnace for all furnaces installed in Lucas county during 1954.

Similar information was tabulated for gas and oil conversion burners installed in the city of Toledo during 1954. (Conversion burner permits are not required in the Lucas county area outside of Toledo.)

Tabulations on dealers' activities and the makes of furnaces sold during 1954, together with comparisons for the year 1952, are presented here as a guide to further studies of the Toledo market. Even more important, they provide an example of how data can be used by a dealer to find out if he is making the most of the opportunities in his own marketing area.

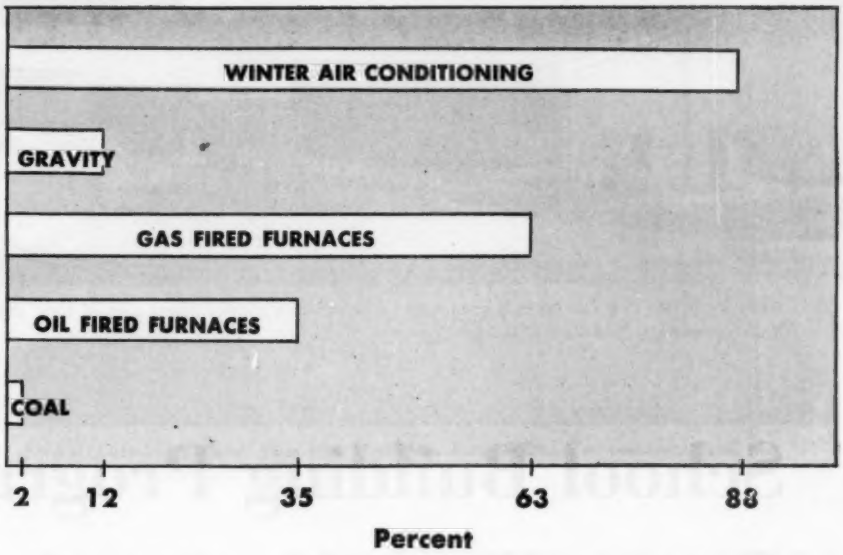
The Furnace Market

The population of Lucas county, O. is approximately 395,000, including the city of Toledo. According to the permit records there were 3758 furnaces sold by independent dealers during 1954.

Of the total furnace installations, 88 percent were forced air units and 12 percent were gravity. Furnaces burned oil, gas and coal as fuel in the ratio of 63 percent gas, 35 percent oil and 2 percent coal.

120 Dealers Did Work; 26 Did 75 Percent

There were over 120 dealers licensed to sell furnaces, but not all dealers made installations during 1954 because some were wet heat dealers who primarily do steam fitting and plumbing. Of the licensed independent dealers making installations, 120 sold from one to 304 furnaces, and 26 of these dealers made a total of 2813 furnace sales, or 75 percent of all sales.



WINTER air conditioning and gravity furnace percentages of installed equipment and percentages of fuel used for total heating systems installed during 1954 in Lucas county show gas fired units representing the lion's share

This is typical of what we find in all cities. Twenty to 25 percent of the dealers do 75 to 80 percent of the business. We call them "key" dealers.

Key Dealers Sell More Than One Line

All except three of the key dealers handled more than one make of furnace; in fact, each of the remaining key dealers sold from two to 13 different makes. In the case of some of the furnace makes handled, key dealers sold only a single furnace. Often, however, these multi-line key dealers sold a good volume of each of three or more different furnaces makes.

In cities surveyed throughout the country, it has been found that few dealers sell both warm air and "wet heat" equipment. License records prove that this is the case in Toledo.

There are about 200 licensed plumbers and wet heat contractors in the Toledo area. Of these only 12 were licensed to do both warm air and wet heat work. Of the 26 key dealers only four were licensed to do wet heat work. These four dealers sold 797 furnaces and 39 boilers, a ratio of 20 furnaces for every boiler. Of the 94 non-key warm air heating dealers, only five sold boilers during 1954, for a total of nine. Total boilers sold during the year by warm air heating dealers was 48, for a ratio of 78 to 1. Thus, there is practically no duplication of sales effort between warm air heating dealers and wet heat installers.

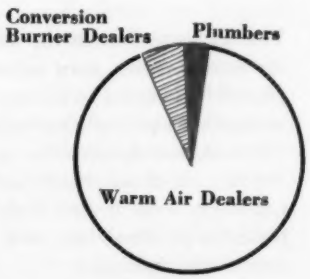
Lucas county does not require dealers to obtain permits for conversion gas burners. However, the city of Toledo has an ordinance with this requirement. There were 1621 conversion gas burners installed by independent dealers during 1954. Of this number, 94 percent were sold by furnace dealers, 3 percent by exclusive conversion burner dealers and 3 percent by plumbers and wet heat dealers who did not sell any furnaces.

The 26 key dealers were responsible for the sale of 1124 conversion gas burners (69 percent of the total).

There were 56 conversion oil burners sold in Toledo during 1954. Of this number, 36 were sold by furnace dealers with key dealers selling 56 percent.

The National Market

The national furnace market is the sum of all the individual city and rural markets. What goes on in these individual cities is, unless unusual circumstances exist, representative of conditions in any other city. It is evident, from this study, that warm air heating is not a part of a lot of other businesses, but is a business in itself, carried on in large volume by established dealers who are cultivating every phase of the market—new construction, replacement and modernization. If other than warm air heating dealers are in the business, they are not identifiable in authoritative records and there is no recorded volume of any importance for which they are responsible.



89 PERCENT of oil conversion burners were sold and installed by warm air heating dealers

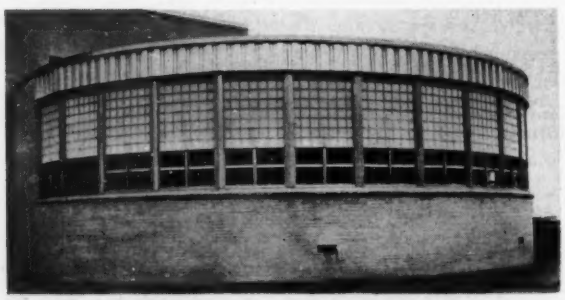
94 PERCENT of gas conversion burners were sold and installed by warm air heating dealers

REPRESENTATIVE OF USES for sheet metal is this new school where tons of light gage stainless steel is used for the hip roof, gutters, conductor pipe, etc.

School Building Program Opens Huge Market for Sheet Metal Work

Sheet metal products, showing up more and more in new schools in the form of walls, roofs, floors, windows, sills, mullions and almost every conceivable application represent a market potential almost unbelievable in its proportions

By Carl F. Block
Development Representative
United States Steel Corp.



STAINLESS STEEL panels, windows, sills, mullions and cornices combine with masonry and glass block in modern school exterior

THE TRANSITION from the little red schoolhouse through the boxlike three story school to today's efficiently engineered education tool is an outstanding example of our modern architectural development.

School board members and others involved in the building of these schools are faced not only with the important item of first cost, but also with the serious problems of durability, ease of construction, fire resistance and maintenance.

PORCELAIN ENAMELED panels with glass fiber insulation form addition to building. Panel surface has dull finish for flat appearance along entire wall

Structural steel has proved to be the answer to many school building problems. Today it furnishes the backbone of most of our modern schools; it is becoming one of the most important items on the building budget.

Steel Meets Need for Fire Resistance

Exterior and interior panels of steel, either stainless, porcelain enameled or baked enameled steel are among the most important contributions toward incombustible construction. Steel stairs, windows, sills, frames, stair railings, doors and other applications add to this goal.

In the new Edison junior high school at West Mifflin Borough, Pa., the architects and engineers have made extensive use of steel to provide an unusual school building. Structural steel provided the framework and stainless steel sheets were used for windows and exterior panels, mullions, flashing and coping in this 18 classroom, two story school building containing auditorium, gymnasium, music room and mechanical shops. A complete stainless steel kitchen and cafeteria is also provided.

The school exterior is a combination of masonry up to about the 4 ft level with stainless steel panels, windows, sills, mullions, and cornices combined with glass block areas above the projecting stainless steel windows.

Weather, Space Limitations Aren't Problems

Erection of the curtain wall panels went quickly in all types of weather. No unnecessary space was used by this thin wall construction. Sufficient insulation was designed to give the wall a low rate of thermal transmission.

The exterior doors, canopy, trim, and school name were also fabricated from stainless steel sheets. The interior stair railings, hand plates, kick plates, grills, window muntins, and sills were all stainless steel, as were tackboard and chalkboard trim, column covers, etc.

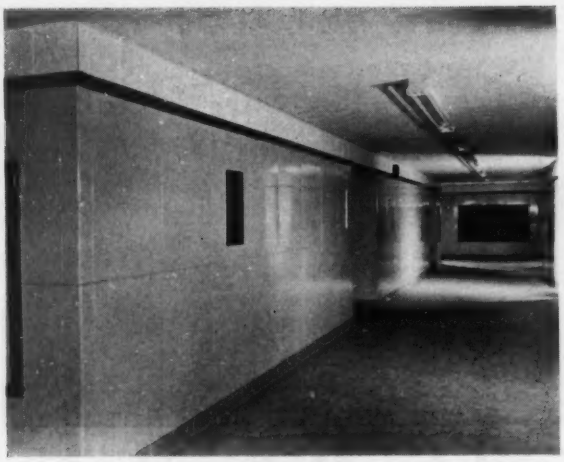
The Walnut Grove school, Borough of West Mifflin, has a complete stainless steel hip roof, 385 ft long and 75 ft wide. About 17 tons of stainless steel sheets went into its fabrication. This standing seam roof is of 12 ft long, 30 in. wide, 26 gage sheets made into panels covering 27⅜ in. widths and provided with a hook edge for joining onto the standing seam. The valleys, gutters and conductor pipe — in fact, all the areas conveying rain water — are 22 gage.

All attachments to the roof or gutters and downspouts, as well as hanger bars, bolts, screws, and snow breakers are of the same stainless steel. An application of a double coated, cold applied 35 lb asbestos felt is applied under the roofing sheets for insulation. Only in the valleys and in the gutters were soldered joints used; there are none in the roof itself. After all construction was completed, the entire roof, valleys, gutters, and conductors were scrubbed down with a solution containing one pound of soda in a gallon of water, using a long handled stiff brush, to insure the complete neutralization of any fluxing acid remaining on the soldered joints or tracked onto the roof by the workmen.

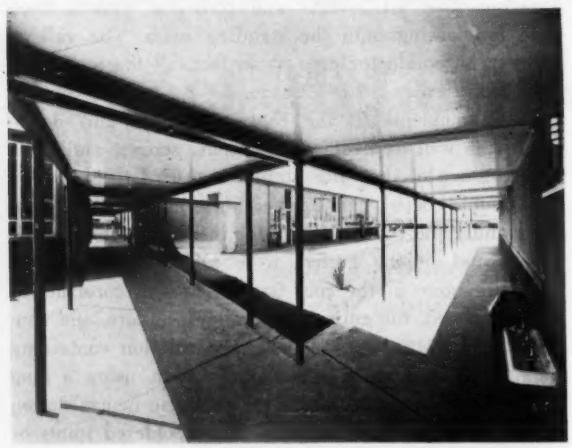
Paneled Additions Provide Needed Space

St. Gabriel's school, Whitehall Borough, Pa., has an addition to the original building, increasing the room area considerably. The exterior walls of this building are cream colored porcelain enameled panels with glass fiber insulation. The surface of each of these panels is a formed section with the vertical ribs spaced about 3 in. apart. The panel surface has a dull finish which insures a flat surface appearance for the entire wall.

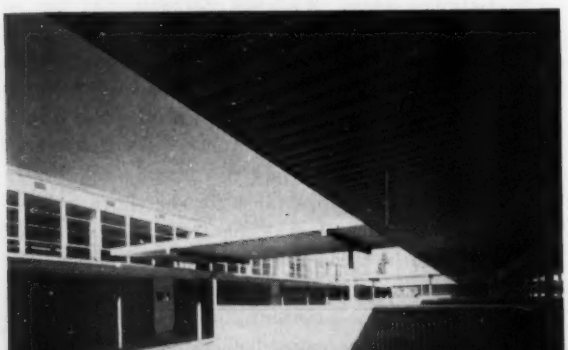
The St. John's school at Monaca, Pa. has developed the steel theme in a complete interior panel design. The steel structure supports steel floors with a concrete wearing surface. Window casements, joists, stairs, and railings are all steel. The entire hall, classroom, and washroom wall design is in large porcelain enameled panels about 3 × 4 ft, in several pastel shades of porcelain enamel. The recessed doorways, classroom walls and closet walls in each classroom are of the same material as is the chalkboard and tackboard trim.



INTERIOR PANEL DESIGN features pastel shades of porcelain enameled panels. Floors are steel with concrete wearing surface; chalkboard on rear wall is a porcelain enameled panel in glare resistant green shade



MODERN CONSTRUCTION creates another demand for sheet metal in roofs over walkways featured in sprawling layout of new schools



MORE ROOFS and walls for one story school walkways call for panels of painted, galvanized or stainless steel

The chalkboards themselves are porcelain enameled steel in a restful, glare resistant pastel green shade. The steel base of the chalkboards permits the use of small magnets to hold display material fast to the boards. The hall panels are all 16 gage steel sheets, formed with small attaching clips, welded at the four corners and porcelain enameled.

Cold formed angle, zee and channel sections were erected to form the support for the classroom walls. A special double lipped channel section supplied the support and attachment for the panel clips. This lightweight fabricated framework provided a firm base for the panels in a flat plane, facilitating erection, attachment and caulking processes.

Enameled Panels Stand Test of Time

The two floors with 13 classrooms, four washrooms and large corridors have answered the question of the usefulness of porcelain enameled panels in schools. Parts of these walls have been up well over a year and a half. No damage or breakage of the porcelain enameled surface, a glasslike material actually fused into the steel surface, has been found, proving it to be rugged enough to withstand considerable abuse.

There are over 17,000 sq ft of porcelain enameled panels in this school. The panels are sound deadened by application of a backing of glass fiber. Soap and water cleaning is the only attention that will ever be required to keep these panels spotless.

Well planned cafeterias are a necessity for the modern school. Stainless steel is a natural material for food handling. It gives the cafeteria a high degree of sanitation, is easy to clean, has a smooth, nonporous surface with remarkable resistance to corrosion and features long life.

Uses Are Increasing

There are many other applications of steel in school buildings. Modern schools have designs using exposed web carbon steel joists in the classrooms and even under exterior canopies. The air conditioning systems of many schools have duct systems fabricated from galvanized sheets. Ductwork must be a clean, neat job that will give the longest service possible. Galvanized sheet steel can be formed, bent, rolled, cut or stamped quickly into the duct required for the most complicated jobs.

With the advent of one story schools which are spread over a wide area, walks between classrooms are called for. As protection against the elements, these walkways are often covered by simple formed panels supported by small pipe or beam columns. Gymnasium walls and roofs have utilized these same formed sections in painted or galvanized carbon steel; they are also often designed in stainless steel.

Whether designed in stainless, porcelain enameled, or carbon steel, or other sheet metal products, the demand for clean lines in modern school construction creates a vast market for sheet metal contractors throughout the country.

Housing Census Heating Data

New York City • Northeastern New Jersey

SUGGESTIONS on how a warm air heating dealer can use some of the housing data available from the Bureau of Census were given in the November 1954 American Artisan. Localities covered in the reports are metropolitan areas that are socially and economically integrated with the central city. Data for various areas has been reported regularly in American Artisan since May 1953. Additional reports will continue to appear regularly.

Types of Fuel Used in Centrally Heated Dwelling Units

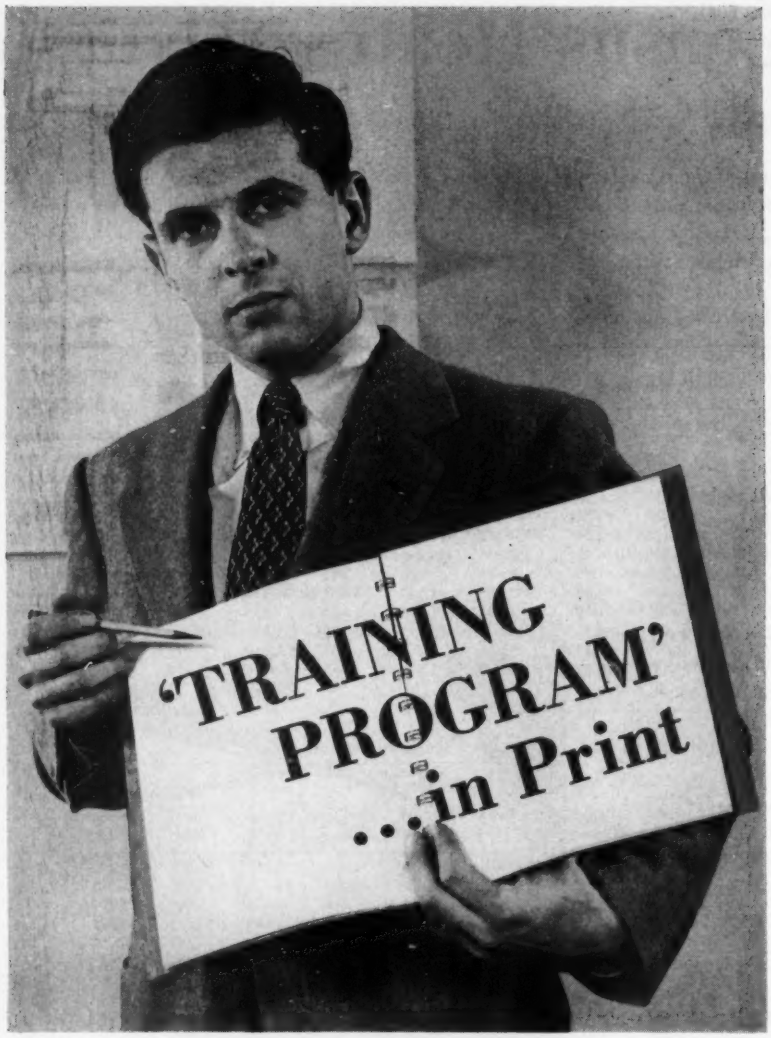
	Standard Metropolitan Areas										
	New York City, N. Y. and Northern New Jersey										
	The area	New York Portion	Bronx County	Kings County	New York County	Queens County	Richmond County	Nassau County	Rockland County	Suffolk County	Westchester County
All dwelling units	3,953,876	2,961,207	432,259	814,134	635,944	495,308	55,820	206,701	25,382	108,402	187,257
Number reporting heating equipment	3,718,845	2,766,200	420,510	783,720	604,555	454,250	51,165	187,285	21,345	70,255	173,115
Central heating	3,229,760	2,472,185	409,190	662,645	531,500	418,555	44,375	178,055	16,500	57,680	153,685
Coal	1,302,200	956,170	205,600	246,285	250,845	136,205	22,035	34,950	4,680	18,945	36,625
Wood	7,980	5,895	910	1,590	1,625	820	85	210	80	255	320
Utility gas	606,320	523,085	100,200	145,820	137,000	84,580	3,005	16,150	4,890	2,400	29,040
Bottled gas	9,880	7,655	795	1,695	1,595	1,275	90	645	180	765	615
Liquid fuel	1,199,570	892,345	94,010	244,325	108,050	183,845	18,170	121,085	6,250	34,175	82,435
Other fuel	55,490	45,555	3,090	12,115	15,685	6,415	735	3,550	320	875	2,770
Not reporting	48,320	41,480	4,585	10,815	16,700	5,415	255	1,465	100	265	1,880

	Standard Metropolitan Areas								
	Northeastern New Jersey								
	New Jersey Portion	Bergen County	Essex County	Hudson County	Middlesex County	Morris County	Passaic County	Somerset County	Union County
All dwelling units	992,669	162,427	260,870	189,614	76,353	53,237	107,577	27,742	114,849
Number reporting heating equipment	952,645	156,795	254,750	185,665	72,595	43,720	100,920	26,285	111,915
Central heating	757,575	143,940	202,640	126,535	55,670	37,540	71,840	21,505	97,905
Coal	346,030	44,110	97,090	64,040	28,120	18,660	37,845	9,980	46,185
Wood	2,085	315	540	415	195	195	150	90	185
Utility gas	83,235	17,860	25,205	18,305	4,935	2,455	4,780	1,315	8,380
Bottled gas	2,225	575	320	190	195	485	135	195	130
Liquid fuel	307,225	78,040	75,675	39,415	21,210	14,780	28,035	9,190	40,880
Other fuel	9,935	1,575	2,330	1,710	720	775	575	650	1,600
Not reporting	6,840	1,465	1,480	2,460	295	190	320	85	545

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total occupied						Owner occupied			Renter occupied					
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more
Standard Metropolitan Area of New York City, N.Y. — Also Northeastern New Jersey Counties															
All occupied units	3,684,180	811,885	767,445	425,690	375,160	1,304,000	1,152,045	701,415	450,630	2,532,135	110,470	436,235	342,795	354,265	1,288,370
HEATING EQUIPMENT															
Central heating	3,136,343	739,125	645,321	322,992	239,052	1,189,853	1,046,241	655,599	390,642	2,090,102	83,526	351,532	252,884	224,705	1,177,455
Piped steam or hot water	2,944,526	618,851	600,911	312,894	233,078	1,178,792	909,289	548,122	361,167	2,035,237	70,729	331,569	245,062	219,573	1,168,304
Warm air furnace	191,817	120,274	44,410	10,098	5,974	11,061	136,952	107,477	29,475	54,865	12,797	19,963	7,822	5,132	9,151
Nonentral heating, with flue	313,535	47,158	80,356	68,044	82,023	35,954	67,853	29,460	38,393	245,682	17,698	55,410	59,648	77,815	35,111
Nonentral heating, without flue; or not heated	158,541	13,017	28,703	26,912	44,434	45,475	19,944	7,453	12,491	138,597	5,564	21,768	23,819	42,751	44,695
Not reported	75,774	12,590	13,062	7,752	9,654	32,716	18,015	8,909	9,106	57,759	3,681	7,324	6,448	8,997	31,109
YEAR BUILT															
1945 or later	376,871	127,299	108,587	14,279	10,345	116,361	131,788	114,545	17,243	245,083	12,754	93,035	13,175	10,239	115,880
1940 to 1944	204,702	56,259	48,275	4,680	4,045	91,443	66,914	53,043	13,871	137,788	3,216	35,585	3,845	3,913	91,229
1939 or earlier	2,847,185	608,699	537,290	392,366	344,432	964,398	927,356	521,070	406,286	1,919,829	87,629	242,234	312,869	324,670	952,427
Not reported	255,411	19,629	73,293	14,360	16,336	131,793	25,985	12,757	13,228	229,426	6,872	65,382	12,906	15,439	128,827

(*More heating tables appear on pages* 119 *and* 122)

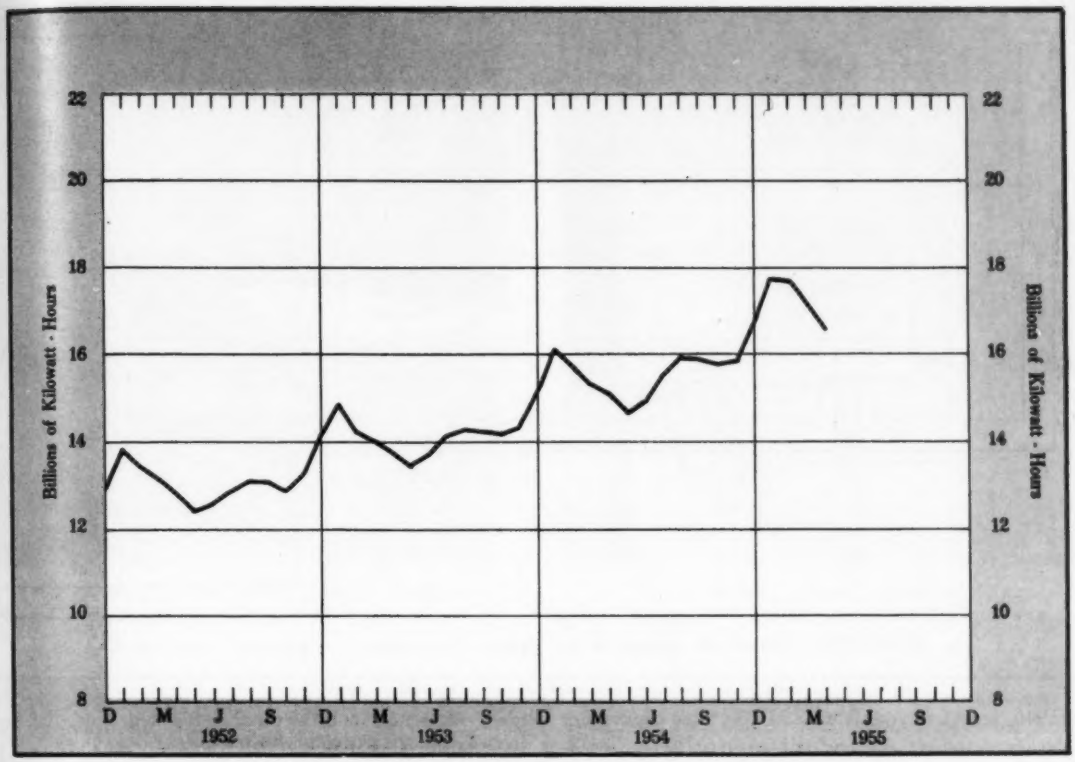


● **This is the second in a new group of articles to appear in American Artisan under the general heading " 'Training Program' . . . in Print." These articles are especially prepared to aid dealers in developing the air conditioning "know how" of their organizations . . . We lead off with these discussions of electrical fundamentals because the problem of inadequate wiring is a serious one, and because it's one that's met on so many jobs in these days of overloaded electrical circuits.**

Short Course in Electrical Circuits Cuts Air Conditioning Woes

by Lee Wilcoxon

The dealer's ability to spot an overloaded circuit can put the finger on a trouble spot before he gets involved in serious financial entanglements. Here's a rundown of basic principles of electricity and their relationship to your air conditioning business



SUMMERTIME AIR CONDITIONING loads are changing the pattern of electricity consumption

AIR CONDITIONING dealers have enough headaches without being concerned with other people's problems. Occasionally, though, troubles which plague another industry boil over into the field of air conditioning.

Those difficulties associated with the electrical industry are an illustration. They pose threats to the growth of summer air conditioning, and dealers who have encountered them are giving them serious thought.

Many factors account for the astounding growth of electrical consumption. A large share of it has occurred in homes, offices and small businesses — the best markets for unit air conditioning.

More than thirty million television sets have been installed since 1946. Untold millions of new washing machines, clothes dryers, freezers, automatic ironers and similar appliances all add to the electrical load.

Since 1951 nothing has added more to the total load than air conditioning. This sudden, additional load has caught the attention of electrical men, and alerted them to hidden hazards where new air conditioners are operating from already overloaded circuits.

Air Conditioning Reverses Consumption Trends

The magnitude of the new air conditioning electrical load has been accented in a study made by the Federal Power Commission. The peak demand, month by month since December 1951, is shown in the accompanying chart.

Air conditioning accounted for so little power consumption in 1952 it produced little noticeable effect on the chart. A slight change was noted in 1953. A rise in power consumption began in May with the arrival of hot weather. This rise contradicted previous charts which showed that power demand always fell off during the summer.

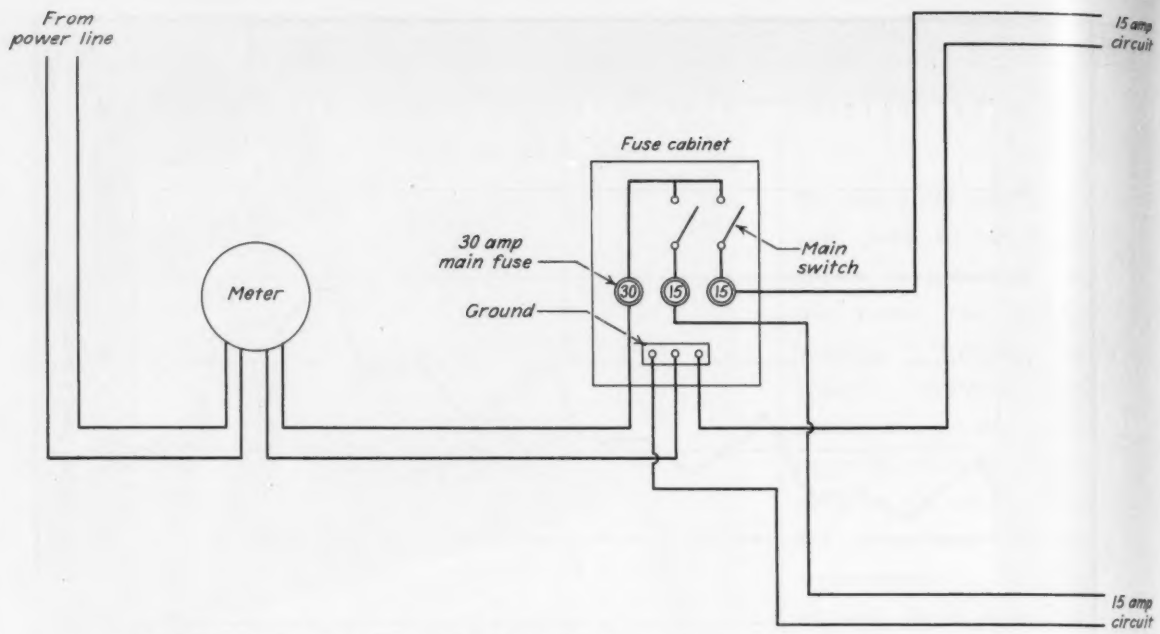
The rise was more dramatic in 1954. The chart again shows a sharp rise in May, one which was sustained through summer. In fact, the demand closely approached that for December, traditionally the month of heaviest demand.

Figures for 1955 are not complete. But preliminary studies indicate electrical demand brought on by the increasing use of air conditioning will rise even higher.

This demand for additional power in itself is not objectionable. Power companies welcome it, coming as it does during a period when demand has always been low. They are disturbed however, by the installation of air conditioning equipment in buildings where wiring is inadequate.

Problems tied to growing demand for power are not new to electrical men. They are not so well known to others however, who are intimately affected. And few are more affected than the air conditioning dealer.

A few comparisons show what has happened. Back in 1941, as American industry tooled up to make munitions for the warring nations in Europe, more electricity was generated than in any previous year. Generators operated at full capacity.



1 SCHEMATIC DIAGRAM outlines wiring details of 30 amp service with two branch circuits

By 1946, only five yeas later, and after war production had slackened, power use had tripled over 1941. Generating facilities were pushed to the danger point; most of them were operating in excess of capacity.

Power consumption did not drop after 1946 as was expected. Instead, it continued rising, almost without break. In 1954 almost three times as much power was used as in 1946.

This multiplied demand for electricity would have only academic interest to air conditioning dealers except for one thing. They are asked to install air conditioning in buildings built in 1941, or earlier, where they find themselves trying to draw power through wiring already carrying excessive loads.

This places the inadequate wiring problem in the laps of air conditioning dealers. And it affects them where it hurts most — in their pocketbooks.

What is Adequate Wiring?

The term adequate electrical wiring has come to have a definite technical meaning in the electrical industry. Since it affects air conditioning as well, dealers will want to become better acquainted with it.

Individual electrical circuits within a building do not normally concern an air conditioning dealer. He merely runs a new electrical circuit from the air conditioning unit to the fuse cabinet, giving little thought to the general wiring circuits. So long as the service entrance has sufficient capacity to handle the electrical load of the air conditioner, the dealer has little to worry about.

But there lies the bottleneck. The electrical service entrance in many buildings is already overloaded. All too often, air conditioning is blocked until the service entrance is changed.

Just what is an electrical service entrance?

The term is familiar to electricians and to most air conditioning men. But it is strange to some who have never had to pay attention to the electrical aspect of their businesses.

Technically, a service entrance includes the meter, the electrical fuse cabinet, and the wires between the main power line and the cabinet. The capacity is governed by the size of the fuses and of the wires which bring electricity to the cabinet. These factors determine whether an existing service has sufficient capacity to handle an air conditioner.

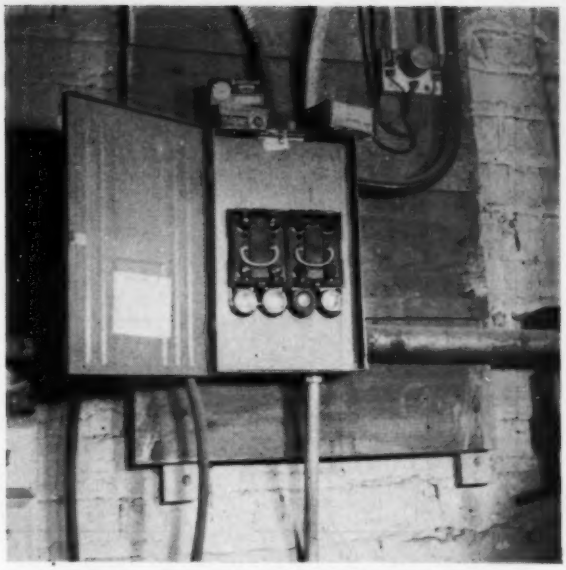
Before World War II, the principal load in a home was lighting; demand was small and 30 amp services were common. Two wires ran from the power line to the building, and to the meter and fuse cabinet. One was the ground wire, the other the "hot" wire. There was a voltage between the hot wire and the ground; contact between the two would produce an electrical shock.

The hot wire was connected to a fuse socket inside the cabinet. Usually a 30 amp plug fuse was used in the socket. The wiring arrangement is shown in the elementary schematic diagram in Fig. 1. Because the hot wire is fused with a 30 amp fuse, the arrangement is known as a 30 amp service. Its maximum capacity is 30 amp at 120 volts.

Small Service Is Obsolete

The 30 amp service is now obsolete. Since 1947 the national electrical code has frowned on it. New 30 amp services are prohibited in many communities. Neither

2 TYPICAL 30 AMP fuse cabinet is easily identifiable and usually is a danger signal for dealers



3 "DEAD FRONT" cabinet is typical of 60 amp service; wiring is isolated to remove danger of touching live wires

central nor room air conditioning should be installed on a service entrance this small.

Electrical inspectors can do nothing about existing service entrances as long as additional wiring is not installed, but they can block new wiring. They can prevent its connection to the service entrance until a larger service is installed. This is the point where contractors are affected when they install air conditing.

Capacity of a 30 amp service is so limited that few appliances can be used. A toaster often draws 10 amp; a small space heater 12 amp or more. Thus a toaster, a washing machine and a couple of lamps can easily blow a main fuse. Yet more than half the homes in this country have 30 amp services. Most homes built in 1941 or earlier have them.

Householders sometimes try to expand the capacity of the service by placing a penny behind the plug fuse to short circuit the fuse and prevent it from blowing. But this foolish practice removes all protection from the main service wires, which when overloaded may cause a fire.

A 30 amp service is easy to recognize when one knows what to look for.

Fuse, Wires Are Tipoffs

Fig. 2 shows a typical 30 amp fuse cabinet. Details vary in different cabinets but the basic arrangement is the same. A sure tipoff is the type of fuse used in it. The familiar plug fuses are not made in sizes larger than 30 amp. If all the fuses — especially the main fuses — are plug types, it is a 30 amp service.

Since the National Electrical Code recommended 60 amp minimum capacity in 1947 most new services have been that size or larger. A typical 60 amp cabinet is shown in Fig. 3.

Another distinguishing feature of a 30 amp service is the number of wires from the power line to the building. A 30 amp service has only two wires; 60 amp and larger services have three.

A 60 amp service has four times the capacity of a 30 ampere service. There are two hot wires, each carrying twice the current of the single 30 amp hot wire.

Knowledge of Currents Pays Off

While most air conditioning dealers are familiar with the manner in which current flows through the three wires of a 60 amp service, a brief refresher may be welcome.

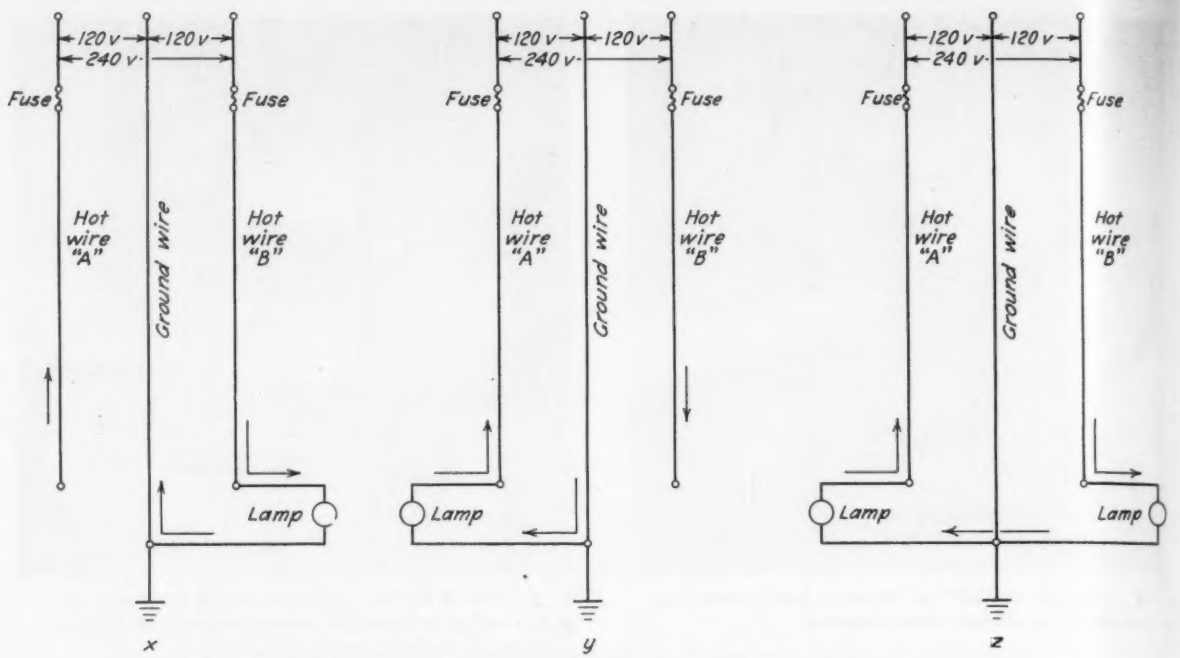
The easiest explanation is to imagine the current is direct, like that from the battery in an automobile. One neutral wire is connected directly to ground, and is called the ground wire.

One hot wire is 120 volts, above ground. The other is 120 volts, below ground. Thus, there are 120 volts between each hot wire and ground. Since one of the hot wires has a voltage above ground, and the other below ground, there are 240 volts between the two hot wires. The diagrams in Fig. 4 illustrate the arrangement.

Lamps, toasters, washing machines, TV sets and other appliances which operate from 120 volt power can be connected between either wire and ground and will be supplied with the proper voltage and current.

In Fig. 4 at *X* we see a lamp connected between hot wire *B* and ground. The lamp draws its proper current, which flows in the direction of the arrows.

At *Y* a lamp is connected between hot wire *A* and ground. Current flows in the direction of the arrows. Note that in *Y* the current in the ground wire flows in one direction, while at *X* it flows opposite.



4 CURRENT MOVEMENT varies in three wire service when various types of loads are connected

If two lamps are connected so one is between wire *A* and ground, and the other between wire *B* and ground, the current flows as shown at Z. If equal current flows through both lamps, the current in the ground wire cancels out — no current flows in it. In a three wire system the only current in the ground wire is the difference, or *unbalanced* current.

Although this explanation is based on direct current, the same principles apply to alternating current. Voltage and current in an a-c line are constantly reversing, but the current in each hot wire is equal to, and opposite, that between the other hot wire and ground.

Check Fuse Ratings

All 60 amp and larger services use three wires. All are basically alike; the only differences are in the sizes of wire employed, and the sizes of the fuses used to protect the wires.

Fuse cabinets look very much alike. It is sometimes difficult to distinguish a 60 amp from a 100 amp cabinet, which is the most common larger size. Best way to check capacity is to remove the main fuses and note their ratings.

Main fuses are usually arranged in a holder which must be removed for fuse inspection as shown in Fig. 5. This is a "dead front" cabinet. It is so named because wiring is isolated to prevent anyone accidentally touching a live wire.

The principal difference between 60 amp and 100 amp cabinets is the size of the fuse holder; a 100 amp fuse will not fit in a 60 amp holder.

Most 100 amp cabinets are larger than 60 amp cabinets, but size alone is not a reliable guide to capacity. It is best to remove the holder and examine the fuse. (It is perfectly safe to remove the holder.) Fuses larger than 30 amp are ferrule or knife types.

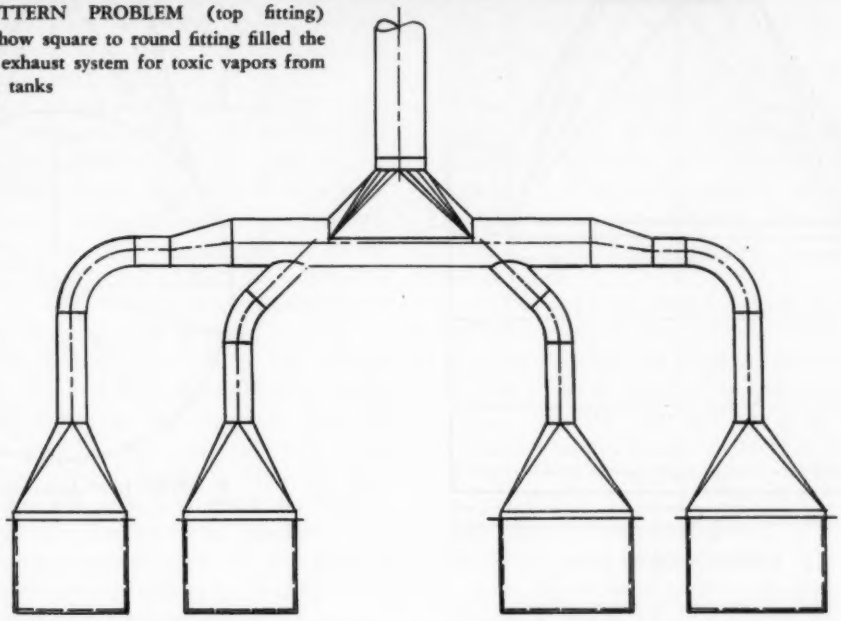
Basic Knowledge May Avert Trouble

Air conditioning men are not generally concerned with details and technicalities of electrical services. Actual electrical work is normally performed by experienced electricians. But dealers should know enough basic principles to be able to estimate capacity of a service. It is to the dealer's distinct advantage to be able to make an intelligent guess whether a new service is needed; such knowledge is a safeguard against bidding too high and losing a contract, and bidding too low and losing money.

Before leaving this subject it should be mentioned that many communities insist that all new services have 100 amp capacity. Inspectors in many areas are beginning to enforce a rule that a 100 amp service must be installed before new loads are added. This rule is strongly supported by the International Association of Electrical Inspectors, a very influential group.

It is worthy of note that Spokane, Wash. has an ordinance requiring future services to have 200 amp capacity. This is the first city to make 200 amp services mandatory, but it is a straw in the wind.

The air conditioning dealer should check with electrical inspectors or with the power company in his own community from time to time. It is better to learn of changes before they occur than to find out after being caught short on a contract.



1 PATTERN PROBLEM (top fitting) shows how square to round fitting filled the bill in exhaust system for toxic vapors from plating tanks

How to lay out a

Square to Round Boot Intersecting a Round Duct

Here's a fitting which can be positioned to suit field conditions without altering the main duct, and which can be substituted when a wye branch elbow fitting is not practical

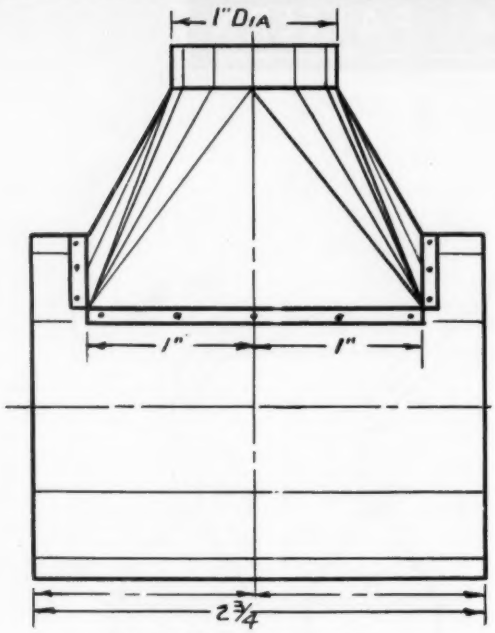
A SAMPLE LAYOUT for a toxic vapor removal system is shown in Fig. 1.

In this example, the limited floor space for the production operation made it necessary to keep the tanks close together. In designing the exhaust system, the lack of space between the branch ducts prevented the use of a wye branch with elbow connections from the main duct to the discharge stack. The square to round boot fitting was substituted. One of the principal advantages of this type fitting is that it can be positioned to the main duct to suit field conditions without alterations to the main duct. As an example, assume that in making a field check of the job, we find the design draftsman had overlooked a water pipe line which was being installed, and located the exhaust stack in the same position as the water line.

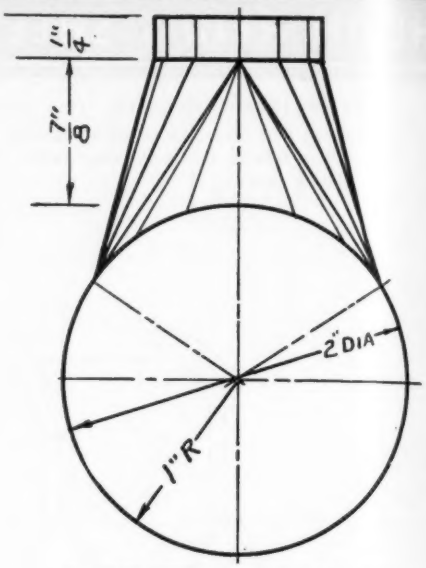
If a wye branch elbow fitting were used, alterations would have to be made in the main duct to relocate the exhaust stack to clear the water line. In the use of the transforming boot fitting, little extra work would be involved in locating the boot to the right or left of the water line, marking the position on the main duct, cutting the hole and connecting the stack boot to the main duct — a procedure which is part of the original job and which would require no major alterations in the installation.

In the construction of the simplified method drawing, a common error is to establish the tangent point at 90 deg to the outline marked 4-8 (Fig. 4). This move will cause line F' (Fig. 4) to cut across the inside of the circle, causing an error in development of the pattern.

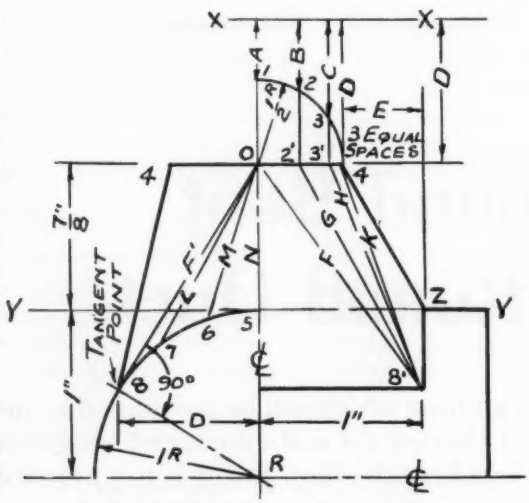
Following is a step by step procedure toward development of the pattern layout:



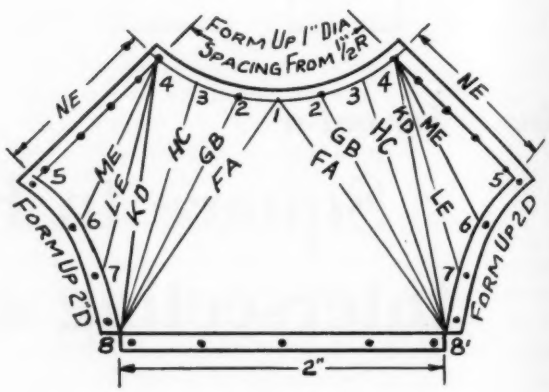
2 FRONT VIEW of fitting



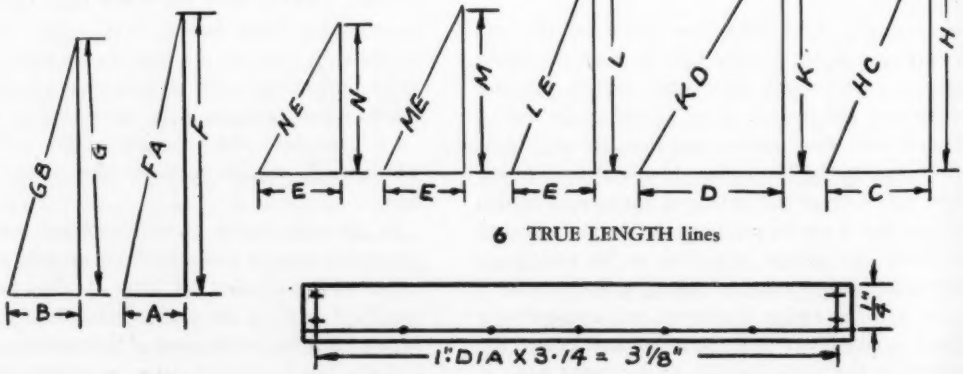
3 END VIEW shows round intersection



4 HALF END and . . . HALF FRONT views
(simplified method drawing)



5 HALF PATTERN of fitting



6 TRUE LENGTH lines

7 COLLAR PATTERN fitting

a) Draw the extended vertical center line marked CL, establish point R, and through this point draw the horizontal center line marked CL. The given radius of the large diameter duct is 1 in.; measure this distance above the horizontal center line and establish line Y-Y parallel to the horizontal center line. Line Y-Y represents the top side of the round duct.

b) From the intersection point of the vertical center line and line Y-Y, measure 7/8 in. above the line Y-Y and mark the point 0. Through this point draw a line perpendicular to and extending to the right and left of point 0. With point 0 as center, and given radius 1/2 in., draw a quarter circle to the right of the center line. With the same radius, locate point 4 on the left of the center line, and draw the diameter line 4-4. Divide the quarter circle into three equal spaces, and mark the points 1, 2, 3.

c) Set a compass at radius 1 in. (from Fig. 3) and with point R (Fig. 4) as center, draw a 90 deg arc to the left of the vertical center line. From point 0, draw the line F′ tangent to the 1 in. radius quarter circle. From radius point R, draw a line at 90 deg to line F′ to intersect the 1 in. radius arc at point 8. Mark the distance from the vertical line to point 8 with the letter D.

d) With a compass, measure distance D, and working from point 0, transfer this distance to the vertical center line above point 0; through the point draw a line parallel to line 4-4. Mark the line X-X. Through the equally spaced points 1, 2, 3, 4, on the quarter circle, draw lines parallel to the center line and intersecting lines 4-4 and X-X. Letter the distances between the quarter circle and line X-X as A, B, C and D, and mark the intersection points of lines B and C and diameter line 4-4 with the numbers 2′ and 3′.

e) Where the vertical center line and the line Y-Y intersect, mark the point 5. Divide the arc 5-8 into three equal spaces as indicated by points 5, 6, 7 and 8. From point 0, draw lines to points 5, 6 and 7, and mark the lines N, M and L.

f) Working from point 8 on the 1 in. quarter circle, draw a line to the right and perpendicular to the vertical center line. From the vertical center line, measure 1 in. and mark the point 8′. Draw lines from point 8′ to points 0, 2′, 3′ and 4 on line 4-4 and mark the lines F, G, H and K.

To Lay Out the Half Pattern, Fig. 5 —

a) Draw the 2 in. horizontal line 8-8′.

b) Draw a right angle. From Fig. 4, transfer line F to the vertical line and transfer fall distance A, from the top quarter circle to line X-X, to the horizontal line of the right angle. The hypotenuse line marked FA is the developed line. With point 8 (Fig. 5) as center, and radius FA, draw an arc above and to the right of point 8. With point 8′ (Fig. 5) as center, and the same radius, cut the arc drawn from point 8, and mark the point 1.

c) On a right angle, transfer line G from Fig. 4 to the vertical leg and fall distance B to the horizontal leg. The hypotenuse line GB is the developed line. With point 8 (Fig. 5) as center, and radius GB, draw an arc to the left of point 1. With point 8′ as center, and radius GB, draw an arc to the right of point 1. With a compass, measure chord 1-2 on the 1/2 in. radius quarter circle (Fig. 4) and with point 1 (Fig. 5) as center, cut arcs GB and mark the points 2.

d) Line H and fall distance C (Fig. 4) are transferred to the vertical and horizontal legs of a right angle. The hypotenuse HC is the developed line. With points 8 and 8′ (Fig. 5) as centers, and radius HC, draw arcs to the right and to the left of points 2. With arc length 2-3 on the quarter circle (Fig. 4) as radius, and points 2 (Fig. 5) as centers, cut the arcs LE, and mark the developed points 3.

e) Transfer line K and fall distance D from Fig. 4 to the vertical and horizontal legs of a right angle. The hypotenuse line KD is the developed line. With points 8 and 8′ (Fig. 5) as centers, and developed line KD as radius, draw arcs to the right and left of points 3. With arc length 3-4 on the quarter circle (Fig. 4) as radius, and points 3 (Fig. 5) as centers, cut the arcs KD and mark the points 4.

f) Mark the difference in the 1/2 in. radius line 0-4 and line 5-Z (Fig. 4) with the letter E.

g) From the left side of the simplified drawing (Fig. 4) transfer line L to the vertical leg of a right angle, and fall distance E to the horizontal leg. The hypotenuse line LE is the developed line. With points 4 (Fig. 5) as centers, and radius LE, draw arcs to the left of point 8 and to the right of point 8′. Set a compass at arc length 8-7 on the 1 in. radius (Fig. 4) and with points 8 and 8′ (Fig. 5) as centers, cut the arcs LE, and mark the developed points 7.

h) Measure line M and fall distance E (Fig. 4) and transfer these to the vertical and horizontal legs of a right angle. Set a compass at the hypotenuse length ME, and with points 4 (Fig. 5) as centers, draw arcs to the left and to the right of points 7. Set a compass at arc chord length 7-6 (Fig. 4) and with points 7 (Fig. 5) as centers, cut the arcs ME, and mark the points 6.

j) Transfer line N and fall distance E to the vertical and horizontal legs of a right angle. The hypotenuse line NE is the developed line. With points 4 (Fig. 5) as centers and radius NE, draw arcs to the left and to the right of points 6. With arc chord length 6-5 (Fig. 4) as radius, and points 6 (Fig. 5) as centers, cut the arcs NE, and mark the points 5.

k) Through the developed points, draw the pattern outline and work lines.

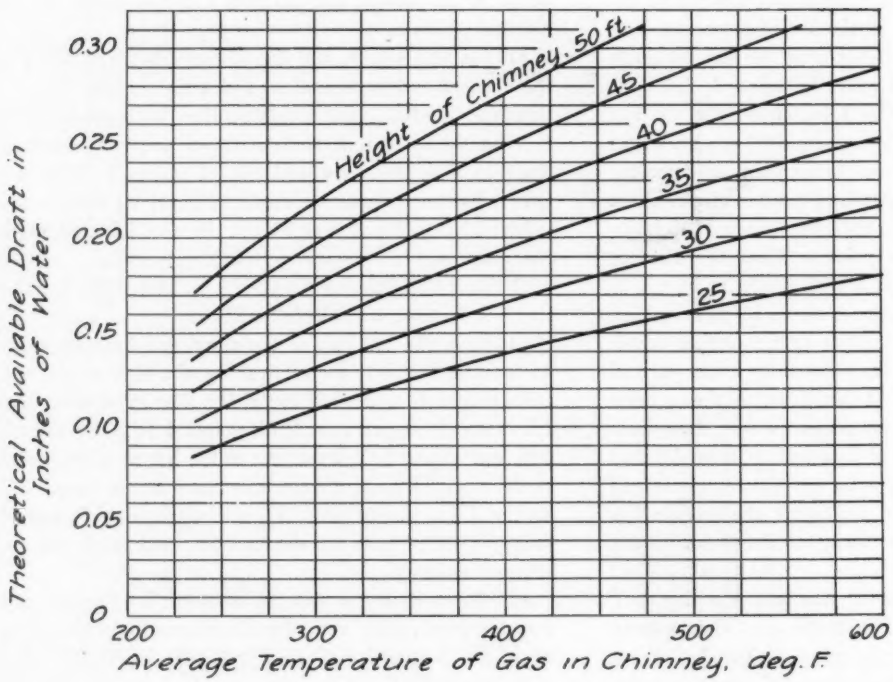
To Lay Out the Collar Pattern, Fig. 7 —

a) Calculate the collar circumference by multiplying the given 1 in. diameter by 3.14, which is equal to 3 1/8 in.

b) Draw a rectangle equal to the 3 1/8 in. circumference by the given 1/4 in. length.

Add allowances for seams and joints, lay out the necessary holes for riveting, and mark the patterns for fabrication.

Performance Standards Rate Flue Gas Venting Systems



1 THEORETICAL maximum draft varies considerably with differences in chimney height and average flue gas temperatures

Analysis of all aspects of the chimney, ventpipe and breeching produces a classification of venting systems for dealers to use as a basis for good installations

By S. Konzo and H. D. Bareither
University of Illinois

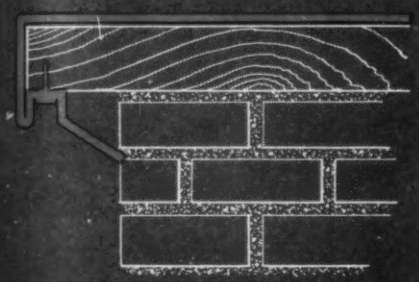
LAST MONTH we discussed bonnet efficiency and submitted proposed standards for such efficiencies. At this point we direct our attention to chimneys, ventpipes and breeching connections from the furnace to the chimney.

The sole purpose of a chimney, ventpipe, and breeching system is to provide a passage through which the products of combustion can be carried out of the structure and dispersed into the atmosphere. In one sense the ventpipe and chimney are a sort of "sewer pipe" in which dangerous and obnoxious gases, fumes, soot, and vapors are carried out of the structure.

(*Continued on page* 86)

HOW WOULD YOU DO IT?

. . . this way?

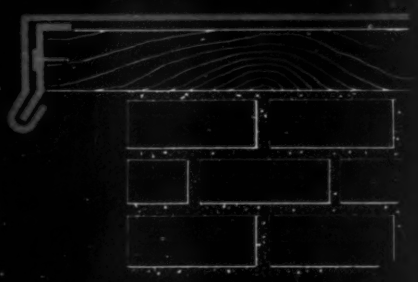


COPING COVER DETAIL
Fig 1

Fig. 1 detail illustrates a method of securing a metal coping cover to a wood plank on top of a masonry wall. The metal is fastened to the underside of the plank with copper nails spaced 12″ apart on both sides of the wall. The metal coping cover is made from 8′-0″ long sheets. The sheets are joined by locked and soldered seams except at every 32′-0″ a 2″ wide mastic-filled loose lock seam is installed.

In the Fig. 2 detail both side edges of the plank edge strips are secured by copper nails. The metal coping cover is hooked over the edge strips to form a ¾″ loose lock seam as shown. The metal coping cover is made from 8′-0″ long sheets and all sheets are joined by locked and soldered seams except at every 32′-0″ a 2″ wide mastic-filled loose lock *joint* is installed.

. . or this way?



COPING COVER DETAIL
Fig 2

When the metal is secured to the plank as shown in Fig. 1, movement is restricted which will cause the metal coping to wave and buckle. The nails will in time become loose so the nail heads will protrude ¼″ or more from the metal. The soldered cross seams may also crack because of the restriction of movement. When each sheet is firmly secured along both side edges the loose lock mastic-filled seam will not function as an expansion joint. Continuous edge strips should be attached to the side edges of the plank as shown in Fig. 2 to provide a track over which the covering can slide.

Accumulated expansion and contraction movement can then be transferred to the loose lock expansion joint.

We do not wish to presume to tell you how to install gutters, leaders, roofs, flashing, coping covers, etc., because there are many methods which you no doubt have found to be satisfactory. The purpose of this advertisement is to point out the methods of installation that have been proved by many years of use, and backed by more than a century and a half of experience in working with copper, to be the most satisfactory techniques. You will find these methods in Revere's 110 page brochure, "COPPER AND COMMON SENSE." Send for a copy today. And remember: Revere has a staff of specialists known as Technical Advisors, whose experience qualifies them to render valuable service and advice regarding the use of metals in the building field. Feel free to consult with them at all times regarding the use of Revere Copper; you incur no obligation. Revere Technical Advisors may be contacted through the Revere Office nearest you.

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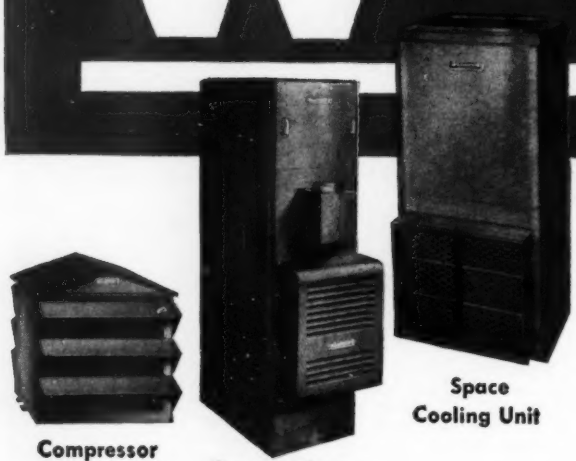

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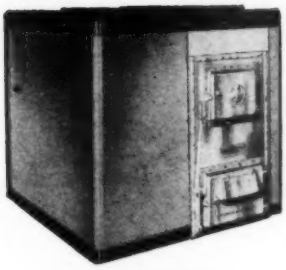

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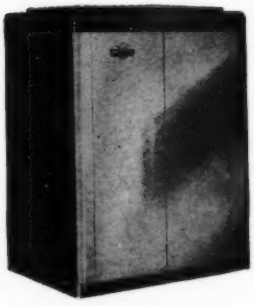

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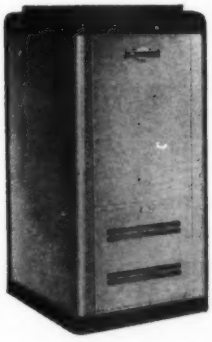

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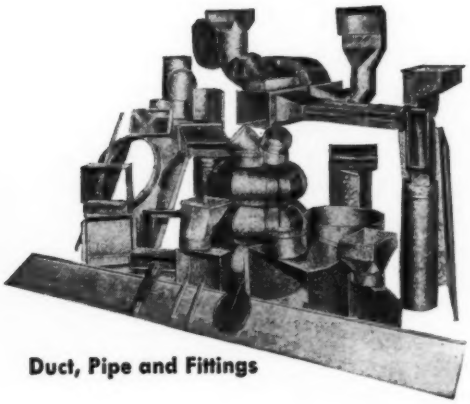
Gas Flo-Warm Lo-Boy

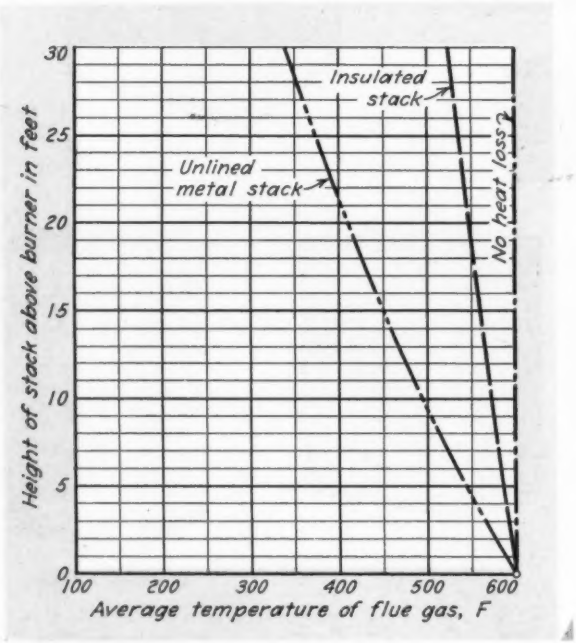


Duct, Pipe and Fittings

Oil Flo-Warm Hi-Boy

Draft is Big Factor in Venting System

(*Continued from page 82*)



2 COMPARATIVE FLUE GAS temperatures show high temperature drop for unlined metal stack as compared to well insulated stack, which will have a greater draft

A chimney is a stack which operates by gravity action to guide the hot gases upwards. Forced draft chimneys are seldom used for small installations and will not be treated in this discussion.

Estimating Maximum Draft

By theoretical analysis we can estimate the maximum possible draft that would be obtained with a tight chimney under conditions when no flow of flue gases is taking place. Essentially, this theoretical draft can be estimated from the following equation:

$$Draft\ (in.\ of\ water) = CH\ (1/T - 1/T_f)$$

in which C is a constant; H is the height of the chimney above the burner; T is the absolute temperature of the outdoor air in deg F; T_f is the absolute temperature of the flue gas in the chimney in deg F. (This is the average temperature of the flue gas and not the entering temperature.)

The curves in Fig. 1 show the manner in which the theoretical draft varies with chimney height and flue gas temperature. Some interesting conclusions can be drawn from an inspection of Fig. 1, as follows:

a) The chimney draft varies proportionately to chimney height. In other words, a greater draft or suction effect will be produced at the base of a tall chimney than in a low chimney. The chimney height referred to in the equation is the height above the burner or the grate surface, rather than height above the floor.

b) The draft increases as the flue gas temperature increases, but not as rapidly. For example, for a 25 ft. chimney the theoretical draft is 0.11 in. WG for a flue gas temperature of 300 F, and 0.18 in. for a flue gas temperature of 600 F.

Insulation Affects Averages

The flue gas temperatures of 300 F and 600 F referred to in Fig. 1 are average temperatures in the stack. They are not entering temperatures. Hence, if a given stack is not well insulated, the flue gases will cool rapidly as they travel up the chimney and the average temperature will be lower than it would be where the gases travel through a well insulated chimney. The subject of heat losses from the stack will be discussed in detail later in this article.

Frictional Resistance is a Major Factor

The theoretical draft is never realized in an actual installation since this theoretical draft is for a condition where no flow exists. As soon as flow occurs, the theoretical draft is reduced by the amount of the frictional resistance created by the flow of the hot gases. The larger the frictional resistance, therefore, the smaller the available draft. That is:

Available draft = Theoretical draft − Frictional resistance

The factors that affect the frictional resistance consist of the following:

$$Frictional\ resistance = k\ f\ L\ v^2/D$$

in which k is a constant; f is a friction coefficient that depends upon the smoothness of the inside of the chimney, the temperature of the flue gas and the velocity of the flue gas; L is the length of travel of the flue gas, and includes not only the straight chimney length but also the length of the breeching as well as the equivalent lengths of all fittings, bends, and expansion sections in the breeching, ventpipe and chimney; v is the velocity of the flue gas; D is the internal diameter of the stack.

Draft Varies with Resistance

Obviously, if the frictional resistance is small, the available draft is large. Hence, it becomes of interest to consider those factors which tend to make the frictional resistance small:

a) If the friction coefficient of a duct is large, the frictional resistance is large, and the available draft becomes small. The friction coefficient is large for rough surfaces and small for smooth surfaces. For example, an unlined brick chimney presents a ragged surface to flow

(*Continued on page 90*)

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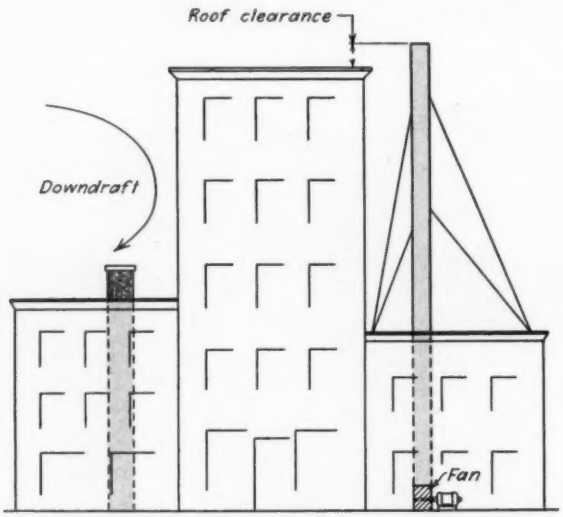
Flue Gas Temperature Determines Chimney Draft

(*Continued from page 86*)



3 INCREASING THE HEIGHT OF the chimney may not be the answer. While high supported stack (right) will avoid downdrafts as experienced by building at left, temperature drop in extra stack height would decrease draft and increase condensation. Alternatives would be placing a forced draft fan at the base or providing better insulation

and the friction coefficient would be large — much larger in fact than that for a lined chimney, for a metal stack, or for a smooth concrete surface. In general, therefore, a smooth surface is preferred.

b) If the equivalent length of travel of the flue gases is great, the frictional resistance is also large. The use of sharp elbows, sudden expansions and long breechings increase the equivalent length. In general, a short, direct, streamlined connection to the chimney is preferred.

c) If the stack diameter is small, the velocity of the flue gases is large for a given weight flow, and the frictional resistance is much larger than for a large stack diameter. A larger diameter stack is usually preferred.

d) The effect of air leaks between the top of the stack and the point where the ventpipe is connected is to reduce the available draft. For example, a water heater ventpipe connection made above the furnace flue connection reduces the available draft for the furnace. In general, the furnace ventpipe connection should be the only one to a chimney. However, since in most cases the chimney draft is more than adequate, the addition of a small vent opening in the same stack will not necessarily prove serious. The water heater ventpipe opening should not be any larger than is necessary.

The flue gas temperature has been shown to be important in determining the theoretical draft of a chimney. In many respects the flue gas temperature is the most important single item as far as the draft producing quality of a chimney is concerned. It is true that the efficiency of a furnace will be lower if the leaving flue gas temperature is increased, and that sufficient heat transfer surface is provided in the furnace to bring this flue gas temperature down to reasonably low levels, of the order of 550 F or less. However, as far as the chimney is concerned, a higher flue gas temperature produces stronger drafts. The essential problem, therefore, is conserving the heat of the hot flue gases as they enter the chimney and avoiding a large temperature drop.

Let us assume that two stacks exist as shown in Fig. 2, one consisting of an unlined metal stack, and the other of a well insulated stack. For both stacks, we shall assume that the entering flue gas temperature is 600 F. In the metal stack, however, heat is transmitted readily through the walls of the chimney to the outdoor air, so the flue gas temperature decreases sharply as it travels up the stack. For example, at a 10 ft height the temperature would be about 495 F and at 20 ft the temperature would be about 410 F. That is, in a 20 ft distance the temperatures would have decreased almost 200 F. In contrast, a well insulated prefabricated chimney consisting of a 2½ in. thick insulated wall would show a flue gas temperature of about 545 F at the 20 ft height, giving a temperature drop of only about 55 F. The insulated stack, therefore, would show a materially higher average flue gas temperature and a greater draft. In fact, it is possible to get the same draft with a short, well insulated stack as with a poorly insulated taller stack of the same internal diameter.

Check Stack Heat Loss

A number of items will affect the heat loss from the stacks:

a) An inside chimney which is completely surrounded by the structure will lose heat less rapidly than a partially or completely exposed stack. Furthermore, an inside chimney will have less tendency for moisture condensation than an exposed stack.

b) It is possible, particularly in an uninsulated metal stack, to add to the height of a chimney without obtaining much benefit. Theoretically, the draft is more effective with additional height. However, if the flue gas temperature is already low because of heat losses, the addition of several more feet would cool the gases still further, and little benefit would be gained by the increase in height.

Occasionally the heating dealer is confronted with a serious problem, as shown in Fig. 3. In heating a low building next to a tall building, the chimney must extend above the top of the tall building; otherwise the flue gases might be discharged at the window level of the tall building. Also, a low chimney next to a tall

(*Continued on page 94*)

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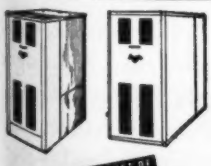

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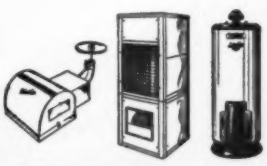

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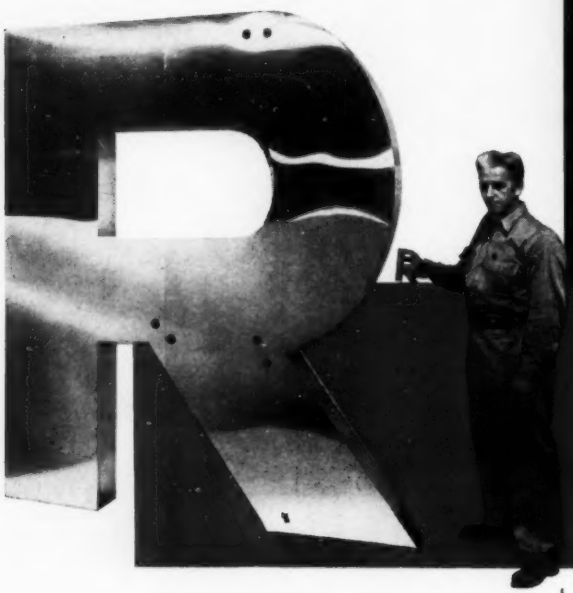

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Performance Standards Rate Venting Systems

(*Continued from page 90*)

building is subject to downdrafts from the tall building with certain wind directions. In any case, the obvious move would be to extend the stack beyond the top of the tall building. In an uninsulated stack several stories high, a point is eventually reached where the flue gases are cooled to practically outdoor temperature. The extra stack height would accomplish little as far as creating draft is concerned, and the heavy condensation of moisture in the flue gas could cause rapid rusting of the metal stack. One alternative would be to provide a forced draft fan at the base of the stack to force the gases outwards. The second alternative would be to substitute an insulated stack for the unlined metal stack.

Many Factors Affect Chimney Condensation

Condensation in chimneys and smoke pipes is not as common a problem as it was when natural gas was first used in large quantities in colder climates. The condensation problem is fairly simple and involves the following factors:

a) In the combustion of fuel, the hydrogen in the fuel burns to form a water vapor. Inside the furnace the water vapor exists at a high temperature and in invisible vapor form, known as superheated steam.

b) If the flue gases are cooled sufficiently the water vapor will condense on cool surfaces. This cooling will usually occur near the exit of the chimney at the roof line, although with an uninsulated metal stack which is completely exposed to outdoor air, the condensation can occur at a much lower height.

c) The condensed water will run down the inside of the stack. If the interior of the stack is vitrified tile, the water will not be absorbed by the tile but might be absorbed by the mortar between the tiles. If the inside of the stack consists of unlined brick, the water will be absorbed by both brick and mortar.

d) Damage caused by stack condensation can be serious and annoying. Unfortunately, the damage does not show up until the plant has been operating for one or two heating seasons. In the early days when gas conversion units were installed in every house in a block regardless of the type of chimney used, several serious cases of condensation damage were reported. In fact, in the old Warm Air Heating Research Residence, one of the two experimental brick flues was purposely left unlined. When a gas furnace was connected to this flue nothing showed up during the first season. At the end of the second season, the moisture finally penetrated the brickwork and the inside plaster of the top floor room. Once the plaster had been attacked from the chimney side, no surface treatment of any kind proved effective. The plaster crumbled and showed a fuzzy growth, and paint would not remain on the wall.

STANDARDS FOR VENTING FLUE GASES

Class A and Class B

The measured draft available at the ventpipe connection of the furnace is 0.02 in. WG or greater when measurements are made on a mild day. Also, no evidence exists of backdrafts, rusting of the vent pipe due to condensation, water streaks at the base of the chimney from condensation, or pulsation of flames.

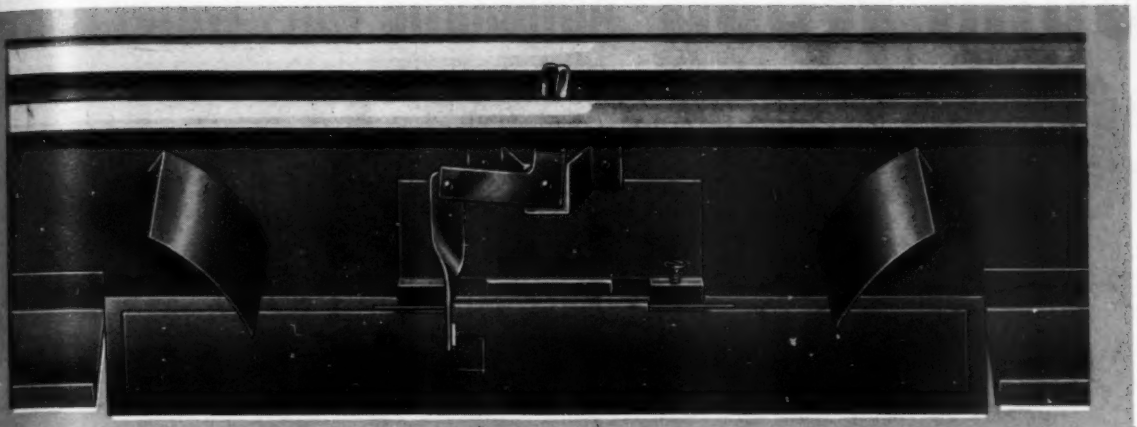
Class C and Class D

The measured draft is less than 0.02 in. of water on a mild day, or evidence exists of some of the troubles enumerated above.

e) Chimney condensation is seldom a serious problem nowadays in areas where gas has been in use for several years. In the first place, unlined chimneys are not used for gas burners. In the second place, the use of insulated, prefabricated stacks has come into wide adoption, and such stacks maintain high flue gas temperatures that avoid condensation. Finally, the use of draft hoods is common; such draft hoods dilute the moist flue gases with dry indoor air and change the temperature at which condensation can occur.

Arbitrary Standards for Venting

The venting arrangement is either satisfactory or unsatisfactory. It is always possible to set arbitrary physical standards, such as the height a chimney must extend above the peak of a roof, or the number of square inches that must be provided in the ventpipe. Such physical rules may be necessary for maintaining standards of design and installation; however, as far as the test of an existing installation is concerned, these physical standards may not be entirely satisfactory. For example, in a certain installation the ventpipe may be smaller than is specified in some codes. Yet adequacy of the draft is what really matters, regardless of what a code may specify. In other words, physical standards serve well at the time the installation is designed and installed, and are a guide for the use of the building inspector. After the system is installed, however, the only standard that has any meaning is a performance standard. That is: "Does the system work satisfactorily?"



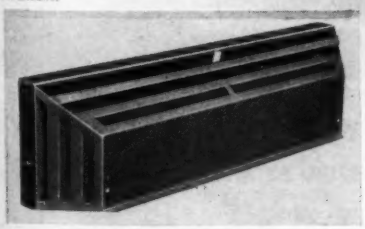
from TITUS *Inc.*

A NEW *BUILT-IN DAMPER*

ON EVERY PERIMETER DIFFUSER

• *NEW INDIVIDUAL PACKAGING AT NO EXTRA COST*

Each Titus perimeter diffuser is individually packaged to assure *perfect condition* and *perfect protection of finish* in traveling from factory to installation.



• *NEW COLOR STYLING AT NO EXTRA COST*

New hammertone finish brings an *impact of distinctive modern design to any room.* Creates new character for the whole structure of a room. Is the most beautiful finish ever created for perimeter diffusers.

...AT NO INCREASE IN PRICE

...There is *no extra cost* for (1) NEW BUILT-IN DAMPER, (2) SPARKLING NEW BEIGE METALLIC HAMMERTONE FINISH, (3) NEW DAMAGE-PROOF SAFETY PACKAGING ... with each diffuser individually packed.

Here is the most advanced new perimeter diffuser model. Built to such precision standards, it is *years ahead in design, appearance, performance.* It is truly the most efficient diffuser ever built ... handling cool or warm air with equal efficiency ... keeping uniform temperatures throughout the room ... directing the air where it is most needed ... eliminating low level stratification.

SEND FOR FREE CATALOG TODAY!

TITUS, Inc., WATERLOO, IOWA

Gentlemen: Please send me free brochure on new TITUS PERIMETER DIFFUSER ... that is creating a new trend in air diffusion.

Name _____

Address _____

Company _____

City _____ State _____

JOHN WOOD Automatic GAS water heaters COST LESS TO OPERATE AND YOU CAN PROVE IT!

It's SAVINGS that make sales

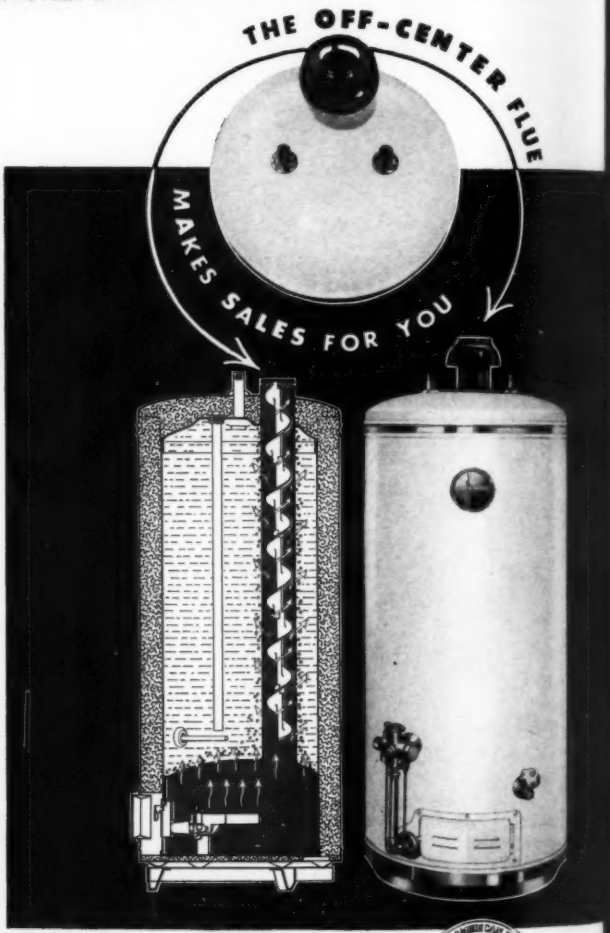
It's here—ready to work for you! JOHN WOOD has a water heater story that's a natural for sales! BY ACTUAL TEST, John Wood Water Heaters cost your customers less per gallon for hot water . . . make *savings no other construction can match!* That's because the OFF-CENTER flue construction—developed and featured by JOHN WOOD—beats every known water heater construction for economy in test after test.

That one fact gives you a real edge on all your competitors. Nobody has an economy story like yours when you feature JOHN WOOD. *Nobody* has the profit chances you get with the proved JOHN WOOD economy story!

Here's potent sales material—backed up by the hardest hitting program of promotion and advertising yet—*all working for you and your bigger profits.*

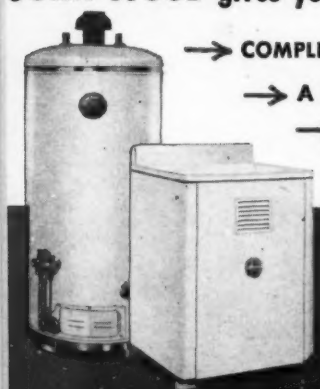
Ask your JOHN WOOD wholesaler for the full story.

Write for FREE Book "How Do You Judge a Water Heater"—Today!



BEATS the rest by EVERY test

JOHN WOOD gives you more to build sales—



→ COMPLETE LINE of sizes and styles, vertical and table top models

→ A PRICE FOR EVERY BUDGET

→ THE ONLY WATER HEATER OFFICIALLY SELECTED BY *Mrs. America*

→ FULL PROMOTIONAL HELPS to build your sales

JOHN WOOD — AMERICA'S PREFERRED SINCE 1857

Finest glass-lined or galvanized water heater anywhere!

JOHN WOOD COMPANY

HEATER AND TANK DIVISION

Conshohocken, Pennsylvania and Chicago, Illinois

WORTHINGTON DEALERS ARE SUCCESSFUL DEALERS!

"Worthington put an end to my financing headaches"

"It takes money to make money," says Nat Jewell, Hot Springs, Arkansas' leading air conditioning and refrigeration dealer. Like many another Worthington dealer, he's enthusiastic about the financial backing that's part and parcel of the Worthington franchise. Here's what Mr. Jewell says about it:

"The kind of inventory I need at the start of the selling season would ham-string me financially – except for one good reason – Worthington doesn't tie up my capital when I need it most! When sales get ready to roll, I've got a warehouse full of products . . . and still have money in my pocket for all the advertising and sales help I need to do a good job. As far as I'm concerned, Worthington's got the broadest and most sensible financing program in the business."

Worthington can end your financing worries — 6 ways!

SEASONAL DISCOUNTS

Save up to 5% on carload lots by ordering in advance of the season. Early ordering assures sufficient stock and saves you money.

FIELD WAREHOUSING PLAN

Set up a complete inventory in your own warehouse and pay for it as you use it. Put your capital to work as you see fit.

RETAIL FINANCE PLAN

Retail dealers can discount their retail paper through Worthington (or through their local bank) . . . guaranteeing 48-hour service.

RE-PURCHASE AGREEMENT

The re-purchase agreement is designed to increase your present line of bank credit, enabling you to carry more stock — and sell more.

DEFERRED PAYMENT PLAN

Keep off-season sales high by inviting prospects to buy now . . . pay months later. Small down payment covers your installation costs.

CO-OP ADVERTISING

Reap benefits of Worthington's big-money national advertising program . . . plus generous co-op advertising plans.

Like Nat Jewell, you'll agree that Worthington backs its dealers to the hilt with the "broadest and most sensible financing program" in the industry. It's just one of many reasons why Worthington dealers are successful dealers. You'll find many more in Worthington's new monthly publication, "The Merchandiser." Write for it today. Worthington Corporation, Air Conditioning and Refrigeration Division, Section A.5.49-A , Harrison, New Jersey.

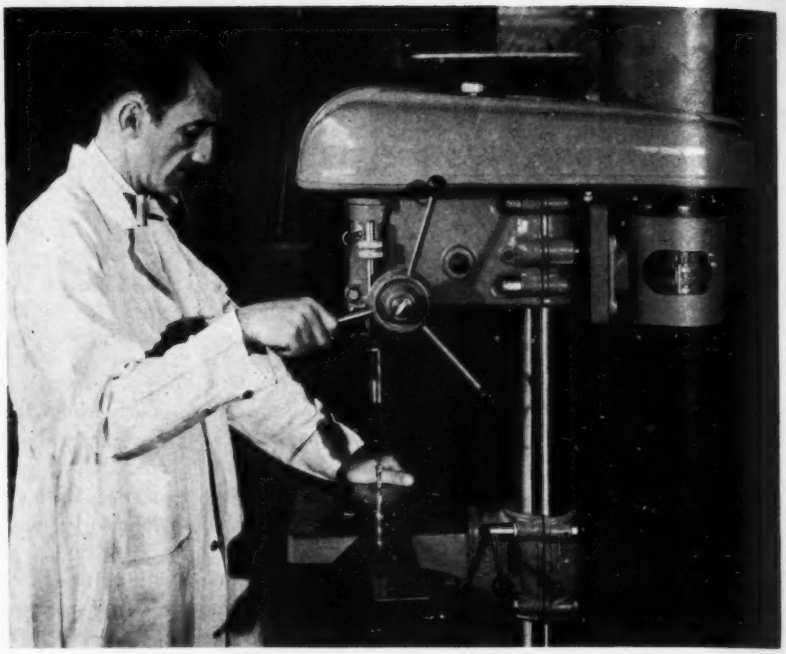
A.5.49

WORTHINGTON

THE BEST FRANCHISE . . . THE MOST COMPLETE LINE

Tips on Techniques

Show How to



DRILLING THIN SECTIONS of aluminum does not require lubrication. On higher gage sheets, use greater speeds and drills that are ground for aluminum, with deep, well polished flutes

Drill Aluminum with Shop Equipment

Greater rotational drill speeds, plenty of lubrication, proper point angles and adequate clearances will produce good results in drilling with standard equipment

By G. W. Birdsall
Reynolds Metals Co.

GOOD RESULTS in drilling aluminum alloys can be obtained with the use of standard drilling equipment and plain high carbon steel twist drills. While there are no special complications associated with drilling aluminum, best results will be obtained by using greater rotational speeds and heavier feeds than those used on heavy metals. Drills especially ground for aluminum have deep, well polished flutes, narrow margins and large spiral angles.

As a general rule, operate the drill at maximum speed. Of course, speed must be reduced for larger diameter holes.

Use Fast Spiral Drill When Possible

More rapid penetration with freer, cleaner cuts is possible with the fast spiral drill. There is less friction and more chip space in the flutes. The standard twist drill, having a 28 deg spiral angle, is suitable for holes of medium depth. On the standard twist drill, the point angle is usually 116 to 118 deg. This angle should be increased to about 130 to 140 deg for drilling most

(*Continued on page* 103)

A NEW BOOKLET OF PRACTICAL INFORMATION

To help you detail and install

Miniature models showing applications and advantages of AnacondA Through-Wall Flashing.

ANACONDA through-wall flashing

The greatest danger of water penetration in masonry construction is above the roof line. The new edition of "Anaconda Through-Wall Flashing" concentrates attention in this critical area. This publication, with its clear, detailed illustrations, shows you how you can provide complete protection, easily and economically. And you, in turn, get the protection of sound engineering when you use AnacondA Through-Wall Flashing, in these ways:

1. No Lateral Movement. The high zigzag corrugations provide a complete bond in the mortar and equally resist movement in all lateral directions.

2. Precision-Stamped Integral Dam. Runs throughout length of flashing, is the full height of corrugations—assuring a uniform installation and reducing possibility of error.

3. Flat Selvage For Neat, Sharp Bends. It's easy to form counterflashing or lock to adjacent sheet metal without distortion. Make bends on the job or in the shop on a regular bending brake.

4. Complete Drainage In Desired Direction. The combination of the accurately formed dam, uniform corrugations and flat selvage give assurance that AnacondA Through-Wall Flashing will drain itself dry on a level bed—minimizing the possibility of wet walls and frost damage.

5. Easy, Watertight Endwise Locking. Merely nest one or two corrugations, overlapping adjacent lengths, even with selvage pre-formed. Water will not rise over corrugations. If desired, the joints can easily be soldered because of the overlapping *flat* surfaces. 5555

FREE! Send for this new publication today.

ANACONDA®
SHEET METAL

The American Brass Company, Waterbury 20, Conn.
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☐ Please send me Anaconda Publication C-28

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COMPANY.....

STREET.....

CITY.....ZONE....STATE.....

LENNOX®

IS NUMBER ONE

Thousands of loyal Lennox dealer-partners have helped make Lennox the No. 1 name in warm air heating. Here, in this representative listing, are but a few who have been

LENNOX DEALERS FOR 25 YEARS OR LONGER

- Heverly Hardware, Center Point, Ia.
- The Holm Hardware, Story City, Ia.
- Johnson Plbg. & Htg. Co., Osage, Ia.
- Koeberly-Heyer Co., Sumner, Ia.
- Koehn Hardware, Atkins, Ia.
- Peterson Hardware & Elec. Co., Dows, Ia.
- Peterson Plbg. & Htg. Co., Dayton, Ia.
- J. Pfaltzgraff & Son, Dumont, Ia.
- M. B. Richardson, Renwick, Ia.
- Ammer Hardware, Monroe, Ia.
- Bergh Plbg. & Htg., Wayland, Ia.
- Clayton Plbg. & Htg., Corydon, Ia.
- Jacob Kimm, Norway, Ia.
- J. W. Shkolnick, Centerville, Ia.
- J. E. Brownlee & Son, Mallard, Ia.
- John & Jerry Hdwe., Buffalo Center, Ia.
- F. M. Johnson, Lohrville, Ia.
- Laing & Muckey, Algona, Ia.
- C. H. Lichty & Son, LuVerne, Ia.
- Paul & Larson, Odebolt, Ia.
- Wigdahl Bros., Ruthven, Ia.
- J. W. Alexander & Son, Panora, Ia.
- M. W. Grove, College Springs, Ia.
- E. H. Redfield, Woodbine, Ia.
- Albert G. Schultz, Schleswig, Ia.
- Henry Langmack, Springfield, Minn.
- B. B. Lockerby, Faribault, Minn.
- Quality Sht. Mtl. Wks., Winona, Minn.
- H. C. Simonsen, Farmington, Minn.
- Babcock Hdwe. Co., Anoka, Minn.
- Buffalo Plbg. & Htg. Co., Buffalo, Minn.
- Osakis Plbg. & Htg. Co., Osakis, Minn.
- L. Pancratz Co., Little Falls, Minn.
- H. Sandgren, Fosston, Minn.
- Dean White, Brainerd, Minn.
- E. A. Babbitt, Seymour, Wisc.
- Badger Sheet Metal Wks., Green Bay, Wisc.
- Bocher Bros., Gillett, Wisc.
- C. F. Bradley, Stoughton, Wisc.
- Mathew Daane, Oostburg, Wisc.
- Fred Lanz, Monroe, Wisc.
- New Glarus Hdw. Co., New Glarus, Wisc.
- Tschank & Christiansen, Appleton, Wisc.
- Atlasta Plbg. & Htg., Stanley, Wisc.
- Burman Hdw., Amery, Wisc.

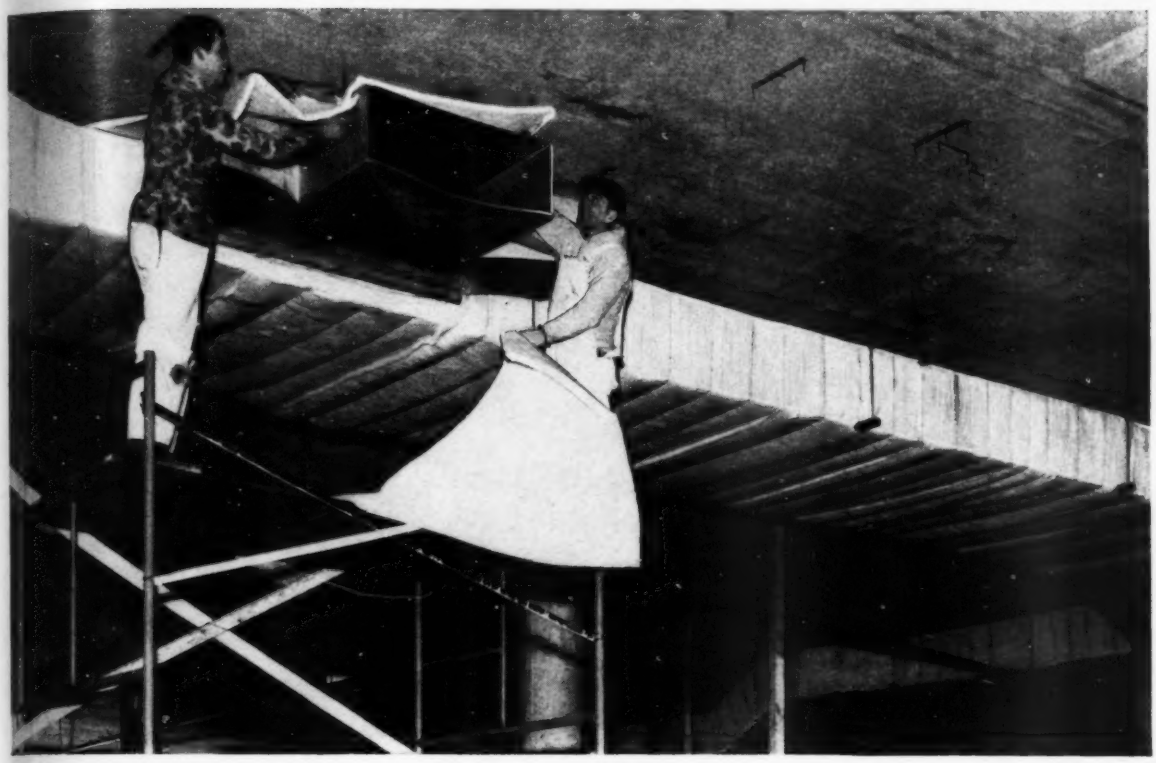
ADDITIONAL NAMES WILL APPEAR IN SUBSEQUENT ADS

Ask a Lennox Dealer why he's a Lennox Dealer... then you'll be one too!

THE LENNOX FURNACE COMPANY

MARSHALLTOWN, IOWA • SYRACUSE, N. Y. • COLUMBUS, OHIO
SALT LAKE CITY, UTAH • LOS ANGELES, CALIF. • FT. WORTH, TEXAS
DECATUR, GA. • DES MOINES, IOWA • *In Canada:* TORONTO and CALGARY

Workmen of the Johnson Insulation Company, Detroit, Michigan, install Super·Fine on hot-air ducts at People's Outfitting Company's new store. Soft-textured blankets were quickly and easily wrapped around ducts and secured with light-gauge wire.



45,000 sq. ft. duct-insulation job proves . . .

L·O·F Super·Fine's strength and resiliency cut installation cost

Such important insulation savings as these can easily be obtained on your own duct jobs

On the big People's Outfitting Company store's duct-insulation job in Lincoln Park, Michigan, workmen averaged 500 square feet per man-day. This was possible

- because Super·Fine's great tensile strength, resiliency, and light weight make it easy to apply in hard-to-reach places;
- because workmen can pull it through narrow spaces close to ceiling without tearing;
- because workmen find the fine-textured blankets pleasant to handle;
- because the material cuts easily and can be wrapped around ducts quickly, without precision measuring or fitting;
- because no special tools or highly skilled labor are required.

L·O·F Super·Fine is highly efficient insulation. Millions of fine glass fibers and countless dead air cells effectively reduce heat loss. Glass fibers will not rot, decay, absorb moisture or support combustion.

It will pay you to figure L·O·F Super·Fine on your next job. Look in the Yellow Pages of your telephone directory for the name of your L·O·F Glass Fibers' distributor, or write: L·O·F Glass Fibers Company, Dept. 45-105, 1810 Madison Avenue, Toledo 1, Ohio.

L·O·F GLASS FIBERS

L·O·F GLASS FIBERS COMPANY
TOLEDO 1, OHIO
Makers of glass fibers by the exclusive "Electronic-Extrusion" process

SEND FOR FREE FOLDER giving performance data and specifications on L·O·F Super·Fine duct wrap and liner.

BIG SAVING!

10 and 16-ounce Chase® Thru-Wall Flashing actually gives you more copper at less cost!

Typical Chase Thru-Wall Flashing installation.

Remember, it's the COPPER that does the waterproofing job of flashing through a masonry wall—and the expenditure should bring the MOST COPPER to the job.

Why pay for thinner copper (and less protection) when you can get the full protection of Chase Thru-Wall Flashing for less money?

10-ounce Chase Copper Thru-Wall Flashing costs 25% *less* than 7-ounce "copper fabric" or membrane flashing, yet Chase gives you *42% more copper!*

16-ounce Chase Copper Thru-Wall Flashing, which costs only about 8% more than 7 oz. membrane flashing, actually gives you a bonus of *128% more copper!*

Chase Copper Thru-Wall Flashing is made from *rolled temper* copper—not just a dead soft "deposited" temper. (This feature alone means *years* more service!) And Chase Flashing has a 3-way bond keyed right into the metal—a watertight bond secures the wall *for good!*

For more information, write for free folder giving details and specifications.

Chase®

BRASS & COPPER CO.

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

The Nation's Headquarters for Brass & Copper (†sales office only)

Albany†	Chicago	Detroit	Los Angeles	New Orleans	Rochester†
Atlanta	Cincinnati	Grand Rapids†	Louisville†	New York	St. Louis
Baltimore	Cleveland	Houston	Milwaukee	Philadelphia	San Francisco
Boston	Dallas	Indianapolis	Minneapolis	Pittsburgh	Seattle
Charlotte†	Denver	Kansas City, Mo.	Newark	Providence	Waterbury

Drilling Aluminum with Standard Equipment

(*Continued from page 98*)

aluminum alloys. This practice will facilitate chip removal and minimize burring.

When drilling high-silicon alloys, drills should have a point of about 90 deg to facilitate penetration. On thin sheet, the drill should have a point angle that will allow it to cut its full diameter before breaking through. The standard lip clearance of 12 to 13 deg would be increased to about 17 deg for heavy feeds or when drilling softer alloys. Excessive drill breakage will result from insufficient lip clearance.

Use Lubricant Freely

Highly polished surfaces minimize friction and the building up of chips. Use the proper lubricant for the job at hand and apply it freely. While the drilling of thin sections does not require lubrication, a generous amount of lubricant is absolutely necessary in all fairly deep drilling operations in aluminum. Supply the lubricant to the drill and work under forced feed. Kerosene and lard oil mixtures are satisfactory for general drilling. Make sure the lubricant floods the hole completely by withdrawing the drill several times during the operation. The drill should be capable of operating smoothly and efficiently at high speeds, and vibration and play should be minimized as much as possible.

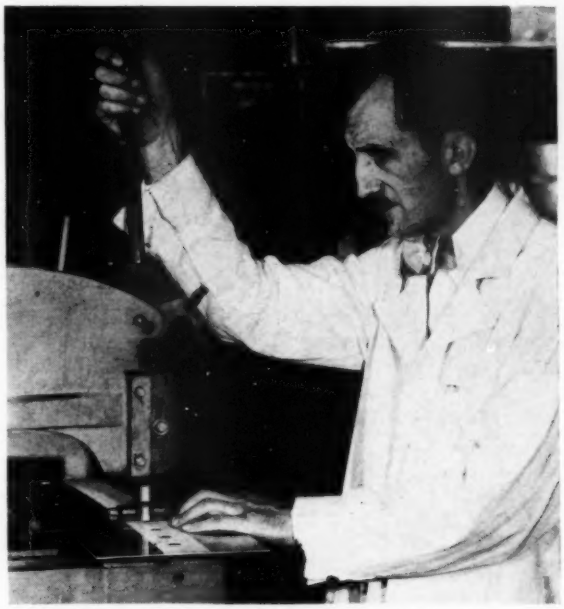
Alloys Are Easier to Machine

Aluminum alloys possess better machining properties than pure aluminum. Since the metal has high thermal conductivity, heat is rapidly conducted away from the point of the drill. Alloys have a low resistance to penetration, which facilitates cutting and reduces energy required by the drill.

On very small diameter holes, the plain high-carbon drills may prove more economical. The recommended selection of drills for aluminum alloys ranges from straight 2 flute (no spiral) to fast 40 to 48 deg spiral drills. On the drill press, the spiral angle of the drill should increase with the depth of the hole to be drilled. This would range from the slow 24 deg spiral for shallow holes in thin stock, to the fast 40 to 48 deg angle for deep holes, where freer cutting is important.

No Special Equipment Needed

Punching, blanking and piercing of aluminum sheets are operations which can be handled by the equipment found in most sheet metal shops. Punching is usually confined to thin sheets because it tends to produce rough edges. However, these rough edges can be eliminated by a subsequent operation. Blanking is the same



BASIC RULES for punching, blanking and piercing turn out quality work with regular equipment

with aluminum as with other metals except for punch and die clearances. The proper clearance data is based on the shear strength of the metal and is obtainable from the information shown in Table 1.

TABLE 1—BLANKING TOOL CLEARANCES are based on shear strength of aluminum

Shear Strength, Psi	Die Size
Up to 10,000	Punch size + .12 t*
10,000 to 12,000	Punch size + .13 t
12,000 to 15,000	Punch size + .14 t
15,000 to 18,000	Punch size + .15 t
18,000 to 24,000	Punch size + .16 t
24,000 to 30,000	Punch size + .17 t
30,000 and up	Punch size + .18 t

*t = thickness of stock

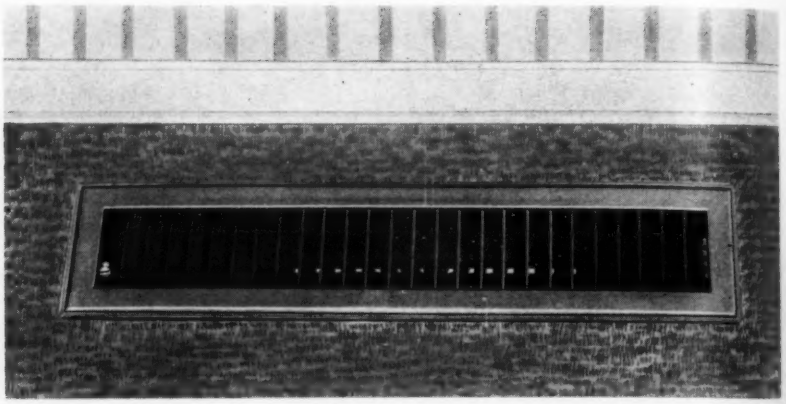
Keep the shearing edges of blanking tools well lubricated; the same applies to the metal itself. Aluminum can be fed through felt rollers or pads saturated with the lubricant. Use a heavier lubricant on material which has a low shearing strength. The surfaces of both the blanking punches and the dies should be ground smooth. Dies should be made of hardened tool steel, and the punches of annealed tool steel. For a small number of stampings, continental type dies can be employed. Usually, rubber, cork or a combination of the two are used.

When piercing or perforating, keep clearances to an absolute minimum. A suggested size for dies is the punch size plus 5 percent of the thickness of the metal. Excessive punch breakage will result from attempts to pierce holes of a diameter less than the metal thickness.

A KEEN APPROACH TO PROFITS

In The Perimeter Heating Field

No. 410 U.S. Diffuser Floor Register



Every feature you and your home owners could want in a diffuser floor register is embodied in the U. S. No. 410.

Its graduated-angle diffuser bars direct the air flow over a broad angle to blanket cold glass and wall surfaces.

New this year is the Sector-Wheel Operator — easily operated by hand or foot—with Set-Lock mechanism for simplified system — balancing at the register.

The No. 410 comes in a new shade of Greystone finish that matches U.S. A-C sidewall and base registers. Furnished in all practical sizes. See your New 55-6 U.S. Register and Grille Catalog for Complete Description and Prices.

No. 1000 U.S. Base Diffuser

For Better Perimeter Systems

Sales Pace-Setter among "Strip base" Diffusers because it sets the pace in Heating and Labor-Saving Features. New design almost doubles outlet area — cuts resistance 60%. Adjustable Slide-Plate boot opening Saves Floor Cutting Expense. Set-lock Balancing damper saves one man's installing time. A BEAUTIFUL DIFFUSER, BEAUTIFUL PERFORMER.

Send for New Catalog No. 55-6

UNITED STATES REGISTER COMPANY

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

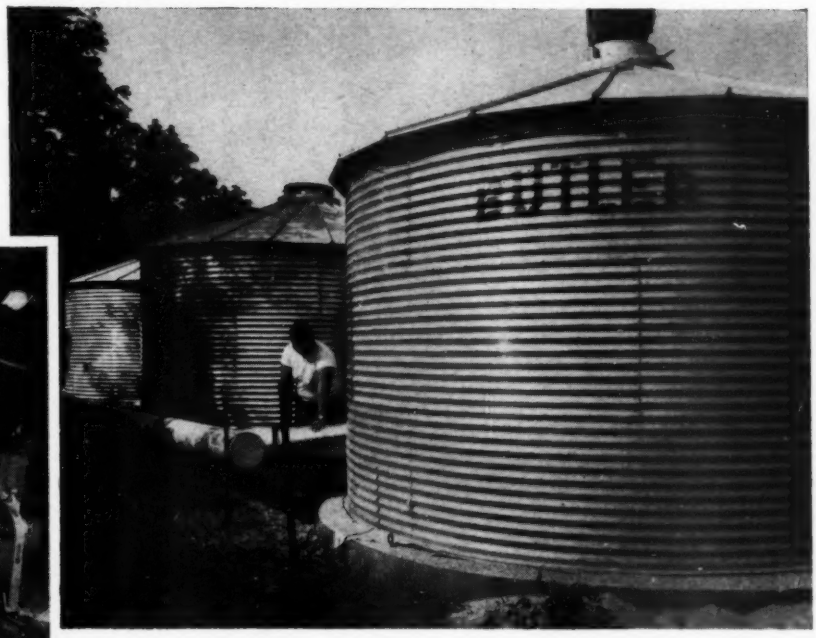
SOLD BY LEADING JOBBERS FROM COAST TO COAST

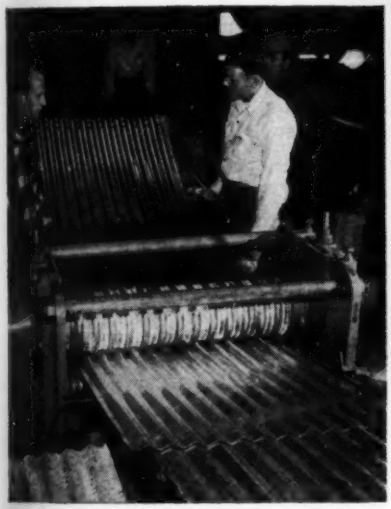
BUTLER MANUFACTURING COMPANY uses

USS Galvanized Steel Sheets

for large grain storage bins

AS SHOWN HERE, these three Butler Storage Bins are part of the "on-the-farm" storage of Mr. Elmer H. Miller, White Pigeon, Michigan. Each bin holds 1000 bushels of grain and is equipped with a crop conditioning fan. The tightly-adhering zinc coating on USS Galvanized Steel Sheets will assure many years of service for these bins.



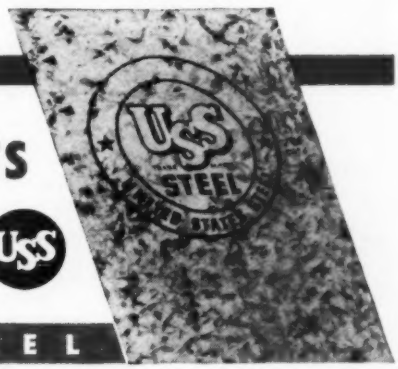


HERE corrugated body sheets are being curved with a radius roll. Other, more severe steps in the fabrication of Butler Storage Bins demand top quality steel—the sort of quality that's a hallmark of USS Galvanized Steel Sheets.

These new grain bins, recently manufactured by the Butler Manufacturing Company at Galesburg, Ill., Minneapolis, Minn., and Kansas City, Mo., are especially designed to serve farmers with "on-the-farm" storage of grains. To develop a bin that would be relatively fast and easy to fabricate, reasonable in cost, and give the farmer good storage, the Butler Mfg. Co. made extensive use of USS GALVANIZED STEEL SHEETS.

There are many reasons why USS Galvanized Steel Sheets are so often selected for use on very important jobs like this. USS Galvanized Steel Sheets have outstanding qualities which make them especially valuable to Butler, and to you. They have a tight, uniform coating that will not flake even under severe bending, shearing, trimming and forming operations. They draw smoothly and evenly. And because USS Galvanized Steel Sheets are made from top quality steel, they assure a good, sound finished product . . . one that will give many years of service.

USS GALVANIZED STEEL SHEETS are another outstanding product of United States Steel. United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.



USS GALVANIZED STEEL SHEETS

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

UNITED STATES STEEL

Here Are Revised Clearance Standards for Heating Systems

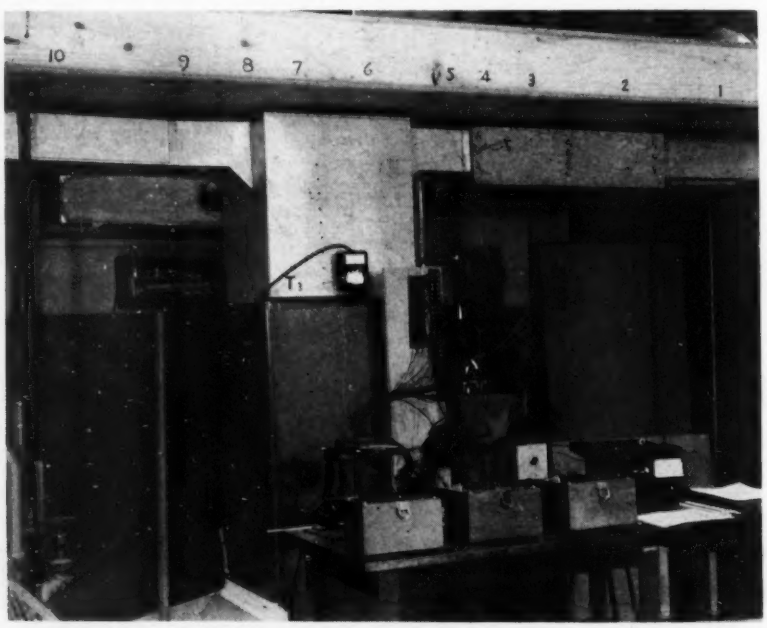
as specified by the committee on air conditioning of the National Fire Protection Association. The approved clearances are the result of intensive tests and supersede the original standards for residential systems

AT THE NATIONAL Fire Protection Association's Annual Meeting in May 1955, Pamphlet #90 (Standards for the Installation of Air Conditioning, Warm Air Heating, Air Cooling and Ventilating Systems) was divided into two separate standards to be known as Standards 90A and 90B. The standards for Residence Type Warm Air Heating and Air Conditioning Systems were published in Pamphlet 90B. The remaining portion of the original standards was published by the association as Pamphlet 90A.

The Committee on Air Conditioning included men well known in the warm air heating industry:

C. A. Pfahl, Sheet Metal Contractors' National Assn., Inc.; C. L. Sapp, National Warm Air Heating and Air Conditioning Association; George W. McCormick, Jr., National Assn. of Fan Manufacturers; Lewis L. Dollinger, Jr., Air Filter Institute; B. P. Nachman, American Society of Heating and Air-Conditioning Engineers; A. C. Buensod, Heating, Piping and Air Conditioning Contractors National Association; L. L. Lewis, Air-Conditioning & Refrigeration Institute.

This committee had worked closely with engineers at Michigan State University to run tests and obtain verified data on heat transfer from all types of residential heating equipment. The tests were financed by the Sheet Metal Contractors' National Association and the research department of Michigan State University. Engineers working on the experiments were Richard Ditsworth, Charles Pesterfield, Lorin G. Miller, Dee Cramer and C. A. Pfahl.



TEST SETUP shows duct and joist arrangement, also temperature measuring equipment and bonnet limit control location

Revisions Are Recommended

The accumulated and evaluated data resulted in extensive recommendations for changes in the residential standards as set forth in Pamphlet 90. The 1955 convention accepted most of the recommended changes and they have been included in the standards now set forth in Pamphlet 90B.

Table 1 gives the new clearances for furnaces and heat exchangers and their smoke, flue or vent pipes where the fuel burning equipment is in-

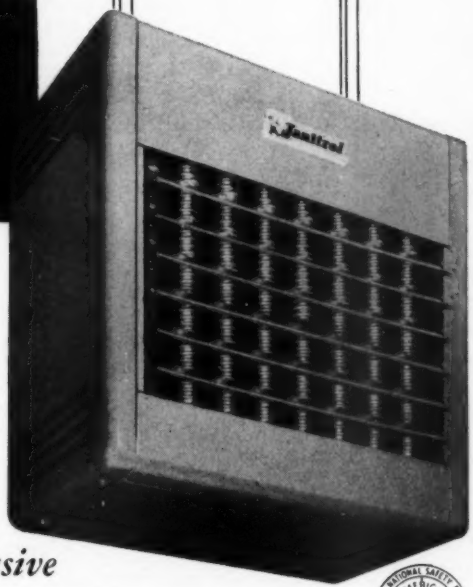
(*Continued on page* 110)

New...Improved!

Janitrol®

MODEL UCS

FINEST UNIT HEATERS BUILT!



Janitrol's 50 years of heating experience is incorporated in the design of the new Model UCS Unit Heaters. These new models are packed with new and improved features that again establish Janitrol's design leadership. Each of these improvements will make your Janitrols easier to sell, install and service.

New

EXCEPTIONAL QUIETNESS. An all-new acoustical design. Rubber-cushioned fan blades and motors, combined with dynamic balancing give a *new standard* for quiet operation.

New

COMPACT DESIGN. The smaller size gives more "head-room" . . . extra clearance between bottom of the unit and the floor below.

Exclusive

MULTI-THERMEX HEATING HEART

The time-proven Janitrol design combination: Multi-Thermex heat exchangers with their exceptional record for long life . . . turbulator baffles which transfer heat rapidly . . . Amplifire ribbon burners for clean, quiet, uniform combustion. . . no flame impingement or hot spots.

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SAFETY OVERHEAT CONTROL

Extra protection for both the unit and the owner's property. If unit overheats, the gas valve closes and the fan motor starts . . . both automatically.

SALES HELPS FOR YOU

Make unit heater selling easier with the full line of Janitrol sales tools . . . product folders, case histories, envelope enclosures and specification sheets. They are all available from Janitrol free of charge or below cost. Ask for them!

WHOLESALERS AND CONTRACTORS. Write today for complete information on these new Janitrol models.

Janitrol®
HEATING AND AIR-CONDITIONING DIVISION

Surface Combustion Corporation, Columbus 16, Ohio
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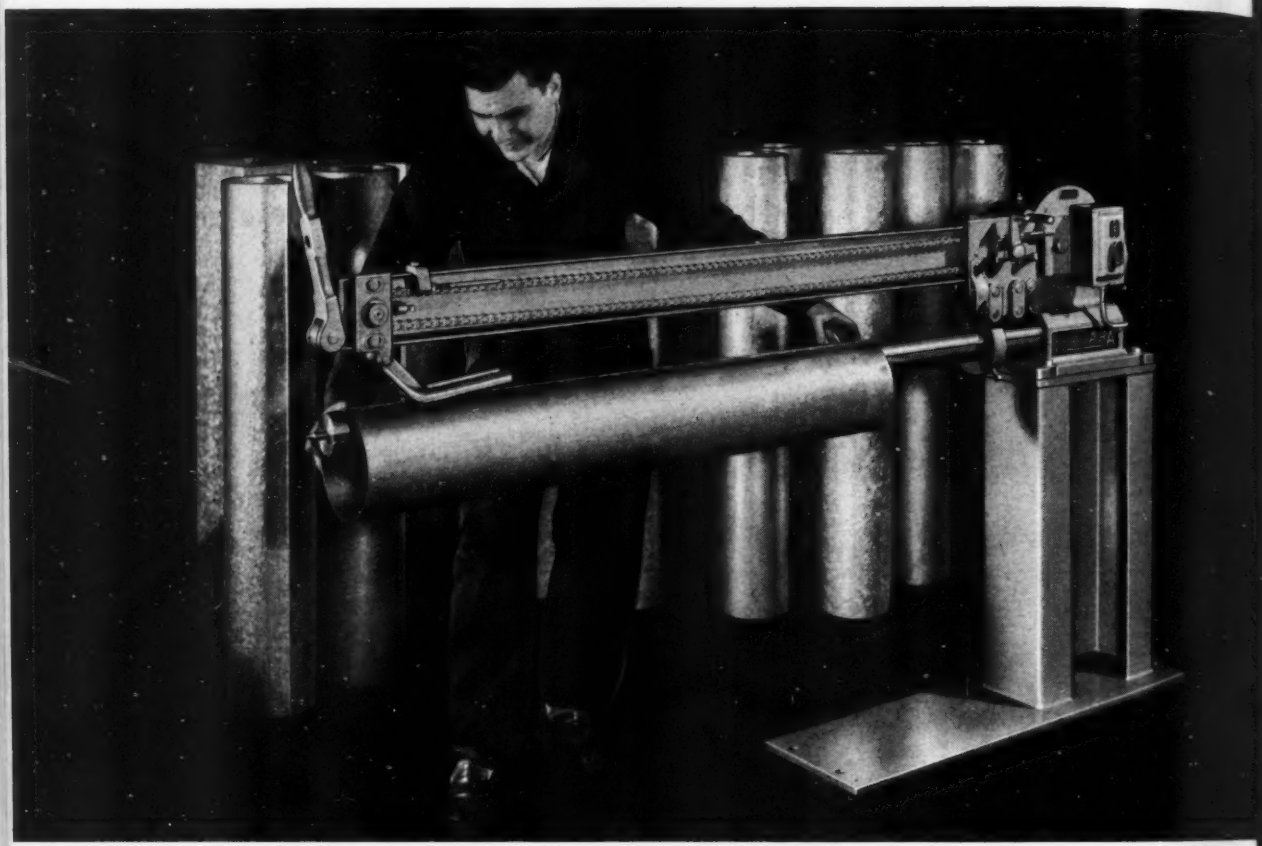
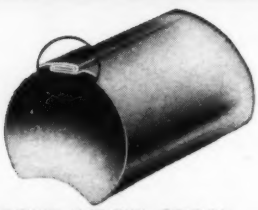
NEW! NIAGARA UNIVERSAL POWER GROOVER

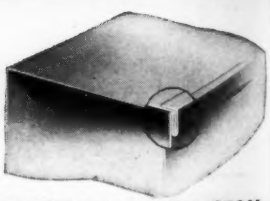
fast and versatile... for consistently accurate production



DOES BOTH!



SINGLE LOCK SEAM



PITTSBURGH LOCK SEAM

Here's a grooving machine that will enable you to do more jobs . . . better work . . . in less time . . . at less cost. With a nominal working length of 48″, the Model 48-U groover can be equipped (optionally) for closing single lock seams or Pittsburgh lock seams or both (an original Niagara feature). Power driven, it enables the operator to work hour after hour without fatigue, while eliminating the noise, delays and uncertainties of hand tools. Convenient controls provide fast, smooth operation to speed production.

GET THE FACTS

about this new machine and other Niagara grooving and seaming equipment. Write for illustrated Bulletin 76B today. It will be sent *free* . . . promptly.

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America's Most Complete Line of Presses, Shears, Machines and Tools for Plate and Sheet Metal Work

Your choice of normal or low starting current... with Performance-Rated

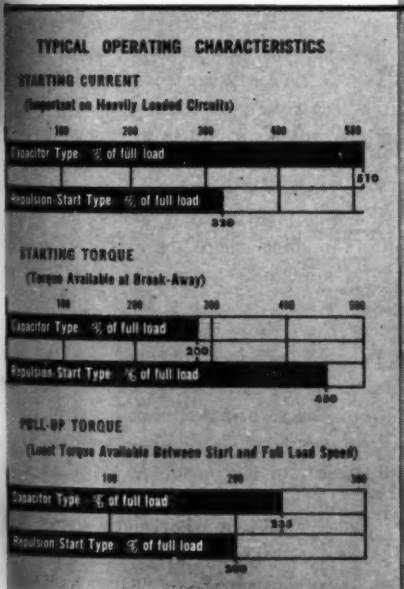
Century

HIGH TORQUE, SINGLE-PHASE MOTORS

Capacitor Motors... ⅛ to 20 H.P. provide high starting torque, high pull-up torque and require normal starting current. They are available in drip proof, dust proof and explosion proof enclosures.

Even if you have severe starting current limitations, you can select the torque you need for sure starts and smooth pull-up to speed from the Century Performance-Rated Single-Phase line (see bar chart below for operating characteristics of two types of Century Single-Phase Motors).

Whatever Your Motor Job . . . there's a Century Motor Performance-Rated to handle it with top effectiveness. Contact your nearby Century branch office or Authorized Distributor.



Repulsion Start, Induction Motors (type RS)... ½ to 7½ H.P. provide very high starting torque, yet require unusually low starting current. They are available in drip proof and splash proof enclosures.

Performance-Rated©
Motors
⅛ to 400 H. P.

CE-32

CENTURY ELECTRIC COMPANY

1806 Pine Street, St. Louis 3, Missouri • ***Offices and Stock Points in Principal Cities***

NFDA Specifies Heating, Cooling Clearances

(*Continued from page* 106)

TABLE 1—CLEARANCES to Combustible Material for Furnaces and Heat Exchangers

	Minimum Clearance (In.)				
	Above & Sides of Bonnet or Plenum	Jacket Sides & Rear	Front[2]	Projecting Flue Box or Draft Hood	Smoke, Flue or Vent Pipe
1. Listed or unlisted automatically fired, forced air or gravity system equipped with 250 deg F temperature limit control installed in accordance with Note 2.					
Burning liquid fuel	1[4]	6	24	18[8]	18[8]
Burning gas fuel	1[4]	6	18	9[7]	9[7]
Utilizing electricity	1[4]	6	18	—	—
2. Listed automatically fired, forced air or gravity system, equipped with limit control not conforming to Note 2, but that will limit outlet air temperature to 250 deg F. See Note 5.					
Burning liquid fuel	2	6	24	18[8]	18[8]
Burning gas fuel	2	6	18	6	6
Utilizing electricity	2	6	18	—	—
3. Steam or hot water heat exchanger — Steam not over 15 pounds gage pressure and hot water not more than 250 deg F.	1	1	1	—	—
4. Automatically stoker fired, forced air system equipped with 250 deg F temperature limit control installed in accordance with Note 2 and barometric draft control. See Notes 3 and 5.					
Burning solid fuel	6	6	48	18	18
5. Heating boilers — steam boilers operating at not over 15 gage pressure and hot water boilers operating at not in excess of 250 deg F of the water-wall or having a jacket or lining of masonry or other satisfactory material.					
Burning liquid fuel	6	6	24	18[8]	18[8]
Burning gas fuel	6	6	18	9[7]	9[7]
Burning solid fuel	6	6	48	18	18
6. Furnaces and boilers, other than above. See Note 6.					
Burning liquid fuel	18	18	48	18	18
Burning gas fuel	18	18	18	9[7]	9[7]
Burning solid fuel	18	18	48	18	18

1) Front clearance shall be sufficient for servicing the burner and furnace.

2) Listed limit control that cannot be set higher than 250 deg F installed not more than 10 inches above the top surface of heat exchanger in a supply plenum that extends at least 12 inches above the top surface of the heat exchanger.

3) Barometric draft control operated by draft intensity and permanently set to limit the draft to a maximum intensity of 0.13 inches of water gage.

4) Clearance above supply ducts within 3 feet of the plenum shall be not less than 1 inch.

5) Clearance above supply ducts within 6 feet of the plenum shall be not less than that specified above the bonnet or plenum.

6) Clearance above horizontal supply ducts within 3 feet of the plenum shall be not less than 18 inches, from 3 feet to 6 feet not less than 6 inches, and beyond 6 feet not less than 1 inch.

7) This clearance may be reduced to 6 inches for listed gas burning furnaces and boilers. The vent pipe clearance does not apply to listed Type B gas vents.

8) For listed liquid burning furnaces and boilers, this clearance may be reduced in accordance with the listing.

TABLE 2—CLEARANCES (In.), with specified forms of protection*

Type of Protection	where the required clearance with no protection is:						
Applied to the combustible material unless otherwise specified and covering all surfaces within the distance specified as the required clearance with no protection (see Fig. 2). Thicknesses are minimum.	18 inches			9 inches		6 inches	
	Above	Sides & Rear	Smoke or Vent Pipe	Smoke or Vent Pipe	Above	Sides & Rear	Vent Pipe
a) ¼ in. asbestos millboard spaced out 1 in.†	15	9	12	6	3	2	3
b) 28 gage sheet metal on ¼ in. asbestos millboard	12	9	12	4	3	2	2
c) 28 gage sheet metal spaced out 1 in.†	9	6	9	4	2	2	2
d) 28 gage sheet metal on ⅛ in. asbestos millboard spaced out 1 in.†	9	6	9	4	2	2	2
e) 1½ in. asbestos cement covering on heating appliance	9	6	18	9	2	1	6
f) ¼ in. asbestos millboard on 1 in. rockwool bats reinforced with wire mesh or equivalent	6	6	6	4	2	2	2
g) 22 gage sheet metal on 1 in. rockwool bats reinforced with wire mesh or equivalent	4	3	3	2	2	2	2
h) ¼ in. asbestos cement board or ¼ in. asbestos millboard	18	18	18	9	4	4	4
i) ¼ in. cellular asbestos	18	18	18	9	3	3	3

*Except for the protection indicated in (e), all clearances shall be measured from the outer surface of the appliance to the combustible material disregarding any intervening protection applied to the combustible material.
†Spacers shall be of noncombustible material.

stalled in rooms which are large in comparison with the size of the fuel burning equipment.

Table 2 designates where furnaces may be installed in rooms large in comparison with the fuel burning equipment but where combustible material is protected in the manner specified. Such reductions in clearances shall not apply to installations in alcoves or closets.

Horizontal Duct Clearances

143: *Clearances from horizontal supply ducts*—minimum clearances shall be as follows:

a) Within a distance of 3 ft of the plenum of a system classified under Items 1 and 3 of Table 1, the clearance shall be not less than 1 in.

b) Within a distance of 6 ft of the plenum of a system classified under Items 2, 4, and 6 of Table 1, the clearance shall be not less than specified above the bonnet or plenum.

c) Beyond the distance from the plenum specified in paragraphs *a* and *b*, no clearance is required except as provided in paragraphs *d* and *e*.

d) From ducts of furnaces classified under Item 4 of Table 1 the clearance shall be not less than 6 in. out to 6 ft and 1 in. beyond 6 ft to a point where there is a change in direction equivalent to 90 deg or more.

e) From ducts of furnaces that require 18 in. clearance above the bonnet or plenum (see Table 1) the clearance shall be not less than 18 in. out to 3 ft, not less than 6 in. from 3 ft to 6 ft, and not less than 1 in. beyond 6 ft.

f) Where a horizontal supply duct passes through or pierces a partition or enclosure constructed of combustible material, the clearance shall be not less than specified in paragraphs 143 *a*, *b*, *d* and *e*. The ends of the space providing this clearance may be closed with a thimble and collar or the wall surfaces extended to the

(*Continued on page* 114)

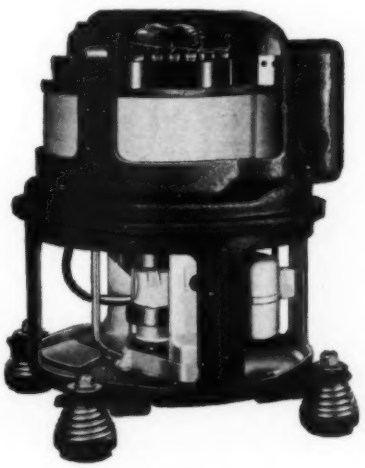
silent smoothness
for air conditioning...

COPELAWELD HERMETICS

Engineered for low-cost operation, powered for years of whisper-quiet performance . . . Copeland combines the most-wanted compressor features into COPELAWELD, the ideal unit for your refrigeration and air conditioning products.

Cool-running two-cylinder Copelawelds are free from vibration and chatter. Heavy-duty, high-power-factor motor delivers exceptionally high capacities at minimum current input. Freon-12 and Freon-22 models. Sizes ⅓ H.P. through 1½ H.P.

Get acquainted with the Copeland welded motor-compressor. Field-test Copelaweld in your own equipment, and sample the performance that is the industry's standard. See your Copeland dealer or write us direct.



COPELAWELD
⅓ H.P. through 1½ H.P.

Copeland
DEPENDABLE Electric REFRIGERATION

COPELAND REFRIGERATION CORPORATION
SIDNEY, OHIO

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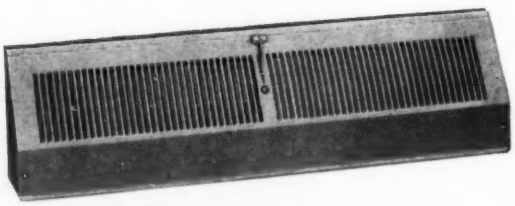
REGISTERS and GRILLES

Fill Every Heating and Air-Conditioning need

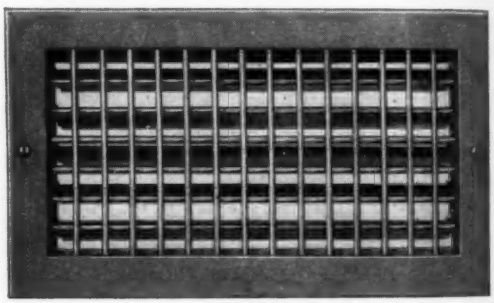
You'll find the answer to all your commercial and domestic register problems in Auer's complete line of registers and grilles. Available for quick delivery in a wide variety of standard styles and sizes to fill the most exacting specifications.

Auer registers and grilles are engineered and built to high standards of uniform quality and accuracy to assure ease of installation with a minimum of on-the-job time loss. They are decorator-designed to enhance both modern and traditional decor while providing the utmost in air-flow efficiency.

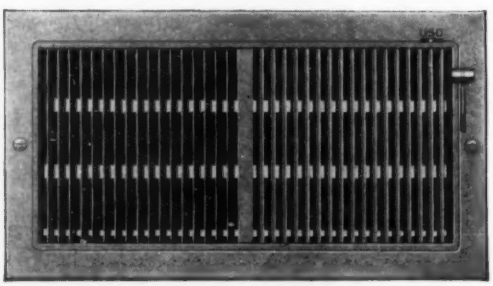
Shown here are a few of the items featured in Auer's "complete-for-every-need" line.



"Perfusaire"—the 18 inch perimeter diffusor that has the capacity of 4 to 8 foot units for heating or air conditioning systems.



The Auer Streamliner series—designed for quiet operation with high velocity air conditioning systems—available with single banks of adjustable bars, vertical or horizontal, also with a double bank, vertical in front and horizontal in back (or the reverse).



No. 4432—Airo-Flex Wall Register—multi-louvres are adjustable to direct air—upward, straight or downward—flexible vertical fins provide right or left deflection for five way control.

Auer DRP Floor Perimeter Registers are available in 2¼ x 14 inches and widths of 4 and 6 inches and in lengths from 10 to 14 inches. Features built-in adjustable damper—attractive appearance and provides large fan-shaped air circulation pattern.

In addition to these items, the Auer line includes ornamental perforated grilles, available in cold rolled or stainless steel, bronze, brass, and aluminum.

Write for complete descriptive literature on Auer's complete line of "Registers and Grilles for Every Need".

Auer REGISTERS and GRILLES

THE AUER REGISTER COMPANY

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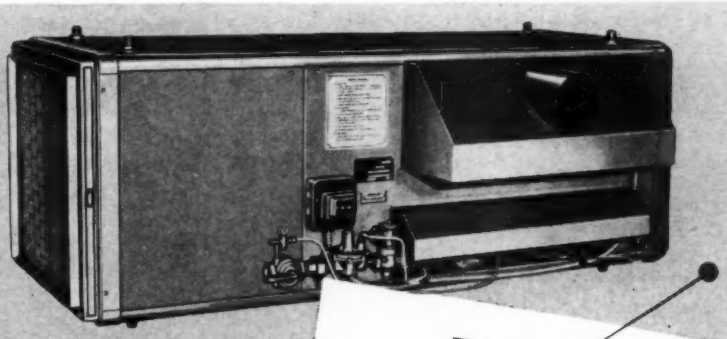
Any HORIZONTAL INSTALLATION
IS A Cinch WITH Any OF THE 4

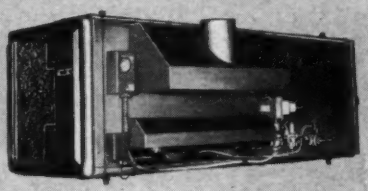
NEW MONCRIEF

Horizontal Gas Fired Furnaces

140,000 . . . 120,000 . . . 100,000 . . . and 80,000 BTU Input Capacities

As illustrated, the Horizontal Gas Furnace is normally shipped assembled with Burner installed on front and at the right end. Burner can also be installed at back and Flue Vent Pipe extended from front, or visa versa. And, as shown below . . .





Burner and Draft Hood have been installed at back, and unit turned completely around, bringing Burner and Air Discharge to left end of furnace.

Easier Profits from Small Spaces

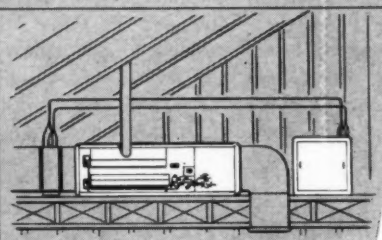
Burner on the front, or burner on the back . . . front flue outlet, or rear flue outlet . . . burner on the front with rear flue outlet, or burner on the rear with front flue outlet . . . burner at the right hand end, or burner at the left hand end . . . flue pipe extended horizontally, or flue pipe extended vertically . . .

NEVER BEFORE, has so compact a heating unit been so adaptable for small space installations . . . as the Moncrief Horizontal Gas Furnace. This is a completely new development in horizontal furnaces . . . backed by Moncrief's 60 years experience in the design and manufacture of finer heating equipment.

The 4 new sizes provide a capacity for every wanted installation. The prices are typical Moncrief value . . . made possible by ingenious design and new manufacturing efficiencies.

You can install the new Moncrief Horizontal Gas Furnaces more quickly, more conveniently and more economically. As a result, you will realize easier profits from installations in smaller spaces . . . by seeing your Moncrief Wholesaler, *now.*

A. G. A. Approved for Natural, Manufactured Mixed or L. P. Gas



Exceptionally adaptable to Year 'Round Air Conditioning. Remote Cooling Coil is installed in Air Discharge Duct of Horizontal Furnace.

THE HENRY FURNACE COMPANY • Medina, Ohio

HEATING AND AIR CONDITIONING UNITS — MONCRIEF — FURNACE PIPE AND FITTINGS

Revised Standards Specify Duct Clearances

(*Continued from page* 110)

duct with noncombustible building material such as plaster on metal lath.

144: *Clearances from vertical ducts, risers, boots and register boxes* —minimum clearances shall be:

a) Where a duct, riser, boot or box on a system that does not require 18 in. clearance above the supply plenum or bonnet enters a floor, partition, or enclosure constructed of combustible material within the distance from the plenum specified in paragraphs 143 *a* and *b*, the clearance from such duct, riser or boot shall be not less than the distance required above the furnace bonnet or plenum (see Table 1) or the duct shall change direction equivalent to at least two 90 deg turns before entering such floor, partition, or enclosure. The above does not apply to pipeless furnaces.

b) Where a supply duct enters the floor of the first story above that in which the furnace is located, the space around the duct at such points shall be sealed with asbestos cement or other noncombustible material.

c) Where a duct, riser, boot or box on a system that requires 18 in. clearance above the supply plenum or bonnet enters a floor, partition, or enclosure constructed of combustible material within a horizontal distance of 6 ft of the furnace, the duct shall be so arranged that heated air must travel at least 6 ft from the closest primary heating surface and change direction equivalent to at least one 90 deg turn before entering such floor, partition or enclosure.

d) Where a duct, riser, boot or box on a system that requires 18 in. clearance above the supply plenum or bonnet enters the floor of the first story above that in which the furnace is situated, the clearance shall be at least 3/16 in. from all combustible material in the floor construction, unless the duct is of double wall construction with a continuous air space of not less than 3/16 in. between the inner and outer walls.

e) Where a register on a system that requires 18 in. clearance above the supply plenum or bonnet is placed in a floor or wall constructed of combustible material, the register box shall be installed with a clear space of not less than 3/16 in. between the top and sides of the box and any combustible material.

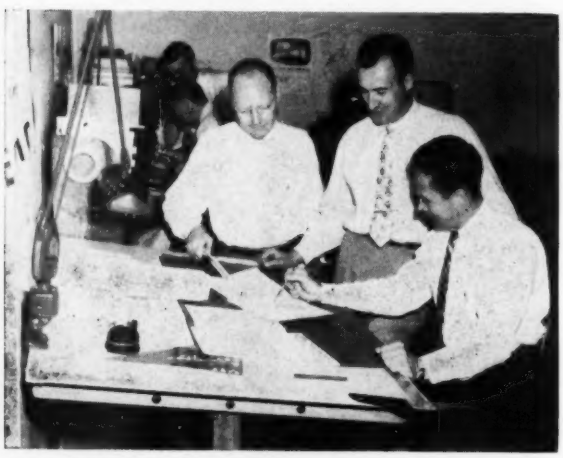
Downflow Furnace Systems

161: *Furnace*—a downflow furnace shall be an automatically operated oil, gas or electric furnace equipped with an approved temperature limit control that will limit outlet air temperature to 200 F, and the furnace shall be designed to prevent unsafe temperatures in the event of reverse flow. An association-listed oil, gas or electric downflow furnace conforms to these requirements.

[*Copies of Standard 90B are available at 35c each from National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.*]

My Wholesaler Saved This One

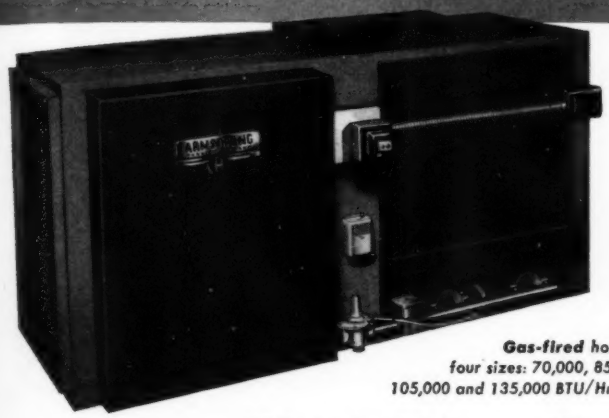
RECENTLY on a field trip to Atlanta, we visited Tommy Thompson, Thompson Co., warm air heating and residential air conditioning equipment wholesaler. When we arrived, Mr. Thompson was busy with L. D. Lawson, a local dealer. When Mr. Lawson was ready to leave, he told me about the job he had been discussing with Mr. Thompson. He said, "I find my wholesaler a friend who can advise me in both technical and business problems when they arise. Just recently when I had a lead on a cooling job that wasn't similar to any I had tackled before, I made some notes and a sketch of the house and brought them to Mr. Thompson to discuss with him how the job could best be handled. The house was a rambling, 30 year old, two story affair. Mr. Thompson and his engineer, H. J. Woodall, sat down and went over all of the details of air conditioning such a residence. After checking my notes, it was found that more information was needed.



Planning the layout for a cooling job are *(l. to r.)* Tommy Thompson, L. D. Lawson and H. J. Woodall

"I returned to the prospect's home and asked if he would permit me to get some additional data I needed to help select the equipment that would be needed to give him the comfort he wanted. I believe it was this second call that showed my prospect the interest I had in his welfare and that because of it he gave me the job when we figured the bid. I found out later that my bid was not the lowest submitted but, as the customer said, 'it was the most conscientious'."

In horizontal furnaces
THE SWING IS TO ARMSTRONG
The line with sales-building features



***Gas-fired** horizontals in four sizes: 70,000, 85,000, 105,000 and 135,000 BTU/Hr input*

***Oil-fired** horizontals in four sizes: 84,000, 112,000, 140,000 and 165,000 BTU/Hr output*

Put these money-makers to work for yourself!

GAS:

- **Meter-Flame burner**
- **Swirl-Tube heat exchanger**
- **Built-in filter rack**
- **Cushion-Air blower**
- **Uni-Weld cabinet**
- **Reversible heat exchanger**
- **Clear, smooth air path**
- **Compact design**

OIL:

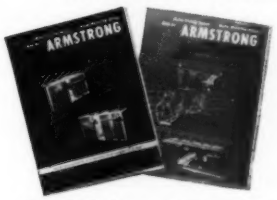
- **Armstrong-built burner**
- **Exclusive Turbo-Regulator air control**
- **Custom Flame Stabilizer**
- **Refractory combustion chamber**
- **Cushion-Air blower**
- **Versatile return air**
- **Built-in filter racks**
- **Dust-tight cabinet**

Armstrong horizontals—in both gas and oil burning models—are sky-rocketing in sales. They are proving themselves *on every count,* to both dealer and householder.

To you, the dealer, because they are available in four sizes for each of the two fuels, which blanket the demand; because they are priced right, even for the housing development market; because they come to you assembled; because they incorporate many sales-building, time-saving, money-making features; because they are extremely compact.

To the householder they are *wonderful*—true winter air conditioners—completely automatic—trouble-free — economy-priced — fuel-savers—and masters of comfort. (Satisfaction like that makes friends for *you,* too.)

Send for these *horizontal bulletins*



Get these bulletins on Armstrong horizontal furnaces—one on gas, one on oil—from your nearby Armstrong wholesaler, or write to us at Dept. AA for copies. Beautifully modern, they illustrate and describe the Armstrong horizontal line, and give specifications and features. They'll help you sell, but first they'll show you a line you'll like.

ARMSTRONG FURNACE COMPANY

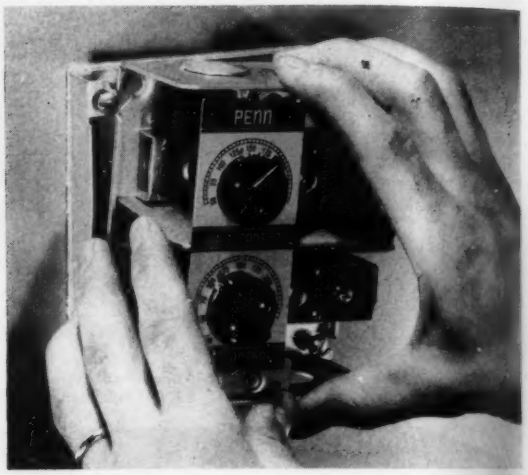
ARMSTRONG FURNACE COMPANY

COLUMBUS, OHIO — DES MOINES, IOWA

AMERICAN MEDICAL ASSOC. ADVERTISING ACCEPTED today's health PUBLISHED BY THE
COMMENDED BY THE CONSUMER SERVICE BUREAU OF PARENTS' MAGAZINE

It's As Easy As "1-2-3" To Install Penn Combination Fan and Limit Control

1. Cut 1¼" power element hole. Drill 2 mounting holes, using asbestos seal as template. Start mounting screws through bracket.



2. Insert power elements and hook slots in control case under screw heads, then tighten screws.

3. Place control cover in position and secure 2 retaining screws. That's all you do . . . it's simple and fast.

Easier and faster to install . . . even in cramped quarters or in poor lighting . . . it isn't necessary to mount the Series 520 in a level or vertical position! But that's just part of the story.

Penn combination fan and limit controls are designed for low, line or millivoltage service . . . *at no extra cost.* Penn's superiority is recognized by customers, too. They know Penn controls mean healthful comfort. They know the Penn name means accurate and dependable operation. It's the kind of dependability that eliminates, for you, those costly service call-backs.

On your next heating job, specify Penn controls . . . *they cost no more!* Penn furnace controls are also available in single units . . . for fan only, or limit only. Be sure to ask your burner manufacturer or wholesaler for Penn heating controls. **Penn Controls, Inc., Goshen, Ind.**

PENN

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

VICTOROIL

HEAVY DUTY OIL HORIZONTAL UNIT

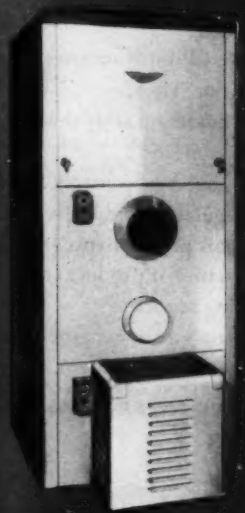
The DO-180 & DO-196S *for*

INDUSTRIAL & COMMERCIAL USE

Large Homes • Service Stations • Public Buildings • Big Jobs!

SAVE FLOOR SPACE

Install On or Under Floors • In Attics • Utility Rooms • Crawl Space



Series "D" COUNTER-FLO for BIG JOBS Usually Requiring 2 Smaller Units Delivers 160,000 BTUs or Better

Here's a pair of VICTORS to tie to! The big space-saving VICTOROIL HORIZONTAL unit delivering 180,000 and 196,000 BTUs is especially designed for small industrial, commercial and large home installation where floor space is at a premium or where attic or crawl space installation is desired.

The *husky* VICTOR series D-200 COUNTER-FLO is designed to complete your line by meeting the increasing demand for ONE powerful Counter-flo BIG enough for today's modern slab or ranch-type homes. They are VICTOR "FIN" constructed and are *WARRANTED FOR 15 YEARS!*

Mail Coupon TODAY!

HALL-NEAL FURNACE CO. 1322-42 N. CAPITOL AVENUE INDIANAPOLIS 7, IND.

Gentlemen: *Send full details on Series "D" Horizontal Oil* ☐
Send full details on Series "D" Counter-Flo ☐

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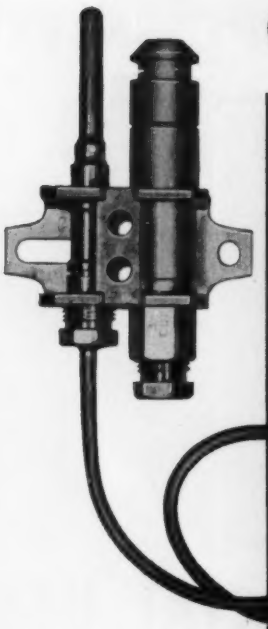
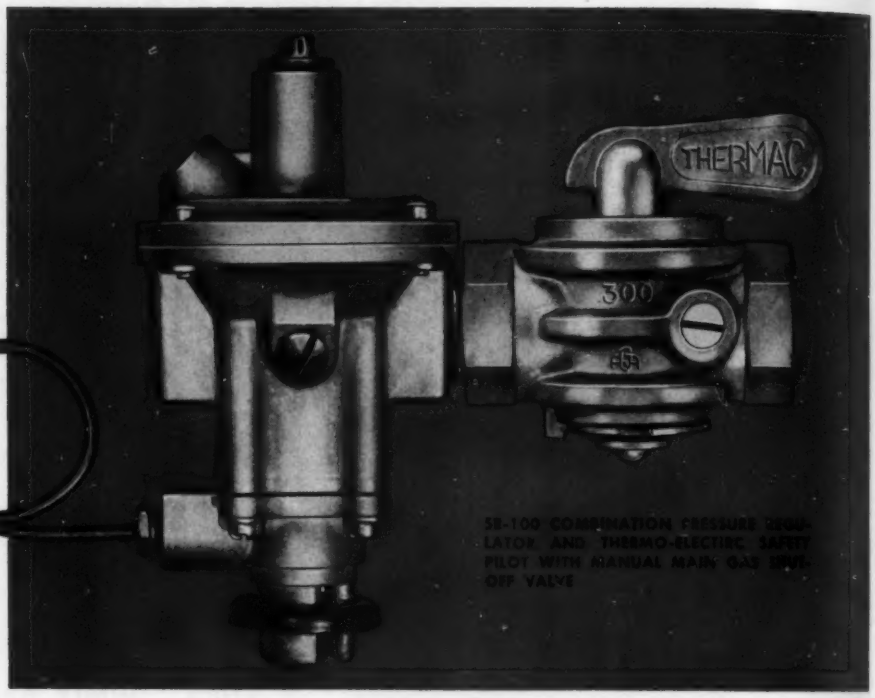
look what THERMAC can do for you pricewise!





SE-100 COMBINATION PRESSURE REGULATOR AND THERMO-ELECTRIC SAFETY PILOT WITH MANUAL MAIN GAS SHUT-OFF VALVE

In today's big "squeeze" between higher operating costs and lower prices the heating equipment manufacturer eyes carefully the substantial savings offered by Thermac.

For example, use of the Thermac Regulator and Safety Pilot eliminates the expense of an electric re-lay or separate automatic pilot. Then, if the Regulator is assembled to the Thermac free flow aluminum alloy shut-off valve, increased line capacity is attained which frequently means that smaller manifolds and smaller, less expensive auxiliary controls can be used. Together with Thermac's favorable pricing on Regulators and Valves the accumulated saving can easily run into a number of dollars per appliance.

Equally important are the excellent performance, quality of product and immediate delivery offered by Thermac. Our Engineering services are available to you. Simply tell us your BTU requirements and our engineers will gladly advise how Thermac controls can help you and to what extent.

SERVICE IS OUR BUSINESS — ON THE SPOT ENGINEERING ASSISTANCE AND IMMEDIATE DELIVERY.

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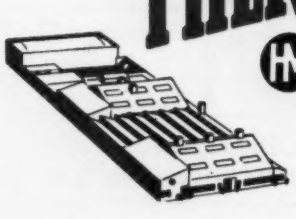


Certified by A.G.A.

Housing Census Heating Data

Chattanooga, Tenn. • Columbus, Ga. • Huntington, W. Va. • Norfolk, Va. • St. Louis

SUGGESTIONS on how a warm air heating dealer can use some of the housing data available from the Bureau of Census were given in the November 1954 American Artisan. Localities covered in the reports are metropolitan areas that are socially and economically integrated with the central city. Data for various areas has been reported regularly in American Artisan since May 1953. Additional reports will continue to appear regularly.

Types of Fuel Used in Centrally Heated Dwelling Units

	Standard Metropolitan Areas										
	Chattanooga, Tenn.			Columbus, Ga.				Huntington, W. Va.			
	The area	Hamilton County	Walker County, Ga.	The area	Chattahoochee County	Muscogee County	Russell County, Ala.	The area	Cabell County	Wayne County	Boyd County, Ky.	Lawrence County, O.
All dwelling units	71,358	60,713	10,645	43,730	1,324	31,684	10,722	70,165	31,917	10,205	13,885	14,158
Number reporting heating equipment	67,380	57,435	9,945	39,720	1,255	29,155	9,310	65,695	30,655	9,245	12,560	13,235
Central heating	14,765	13,835	930	7,125	925	5,915	285	16,845	9,300	1,150	3,890	2,505
Coal	12,145	11,555	590	565	235	310	20	1,275	390	45	155	685
Wood	110	85	25	70	—	65	5	60	40	—	10	10
Utility gas	415	405	10	5,355	585	4,535	235	15,115	8,775	1,070	3,585	1,685
Bottled gas	60	45	15	265	35	215	15	65	20	25	20	—
Liquid fuel	950	790	160	415	20	395	—	70	—	—	45	25
Other fuel	980	875	105	400	45	355	—	220	45	5	75	95
Not reporting	105	80	25	55	5	40	10	40	30	5	—	5

	Standard Metropolitan Areas										
	Norfolk, Va.						St. Louis, Mo.				
	The area	Norfolk City	Portsmouth City	South Norfolk City	Norfolk County	Princess Anne County	The area	St. Louis City	St. Charles County	St. Louis County	Madison County, Ill.	St. Clair County, Ill.
All dwelling units	119,623	56,122	20,796	3,054	28,079	11,572	507,213	263,037	9,223	118,897	55,544	60,512
Number reporting heating equipment	111,865	53,170	19,960	2,995	26,090	9,650	484,485	251,530	8,380	113,190	53,230	58,155
Central heating	43,870	27,610	6,035	835	7,000	2,390	332,150	166,000	3,730	94,500	33,960	33,960
Coal	18,145	11,535	3,090	525	2,485	510	220,220	113,485	2,960	49,350	27,130	27,295
Wood	90	50	5	—	25	10	1,025	515	90	225	95	100
Utility gas	2,095	1,615	110	—	340	30	73,465	38,545	40	26,145	4,100	4,635
Bottled gas	200	30	25	5	60	80	1,740	400	55	755	275	255
Liquid fuel	22,250	13,980	2,655	270	3,815	1,530	28,650	9,525	525	15,990	1,460	1,150
Other fuel	795	240	95	30	230	200	3,715	1,325	55	1,365	555	415
Not reporting	295	160	55	5	45	30	3,335	2,205	5	670	345	110

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

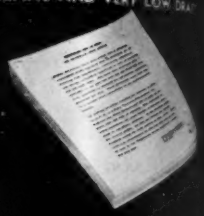
	Total occupied						Owner occupied			Renter occupied					
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more
Standard Metropolitan Area of Chattanooga, Tenn. — Hamilton and Walker Counties															
All occupied units	61,515	42,460	9,780	4,330	2,660	2,285	31,750	29,275	2,475	29,765	13,185	7,910	3,835	2,570	2,265
HEATING EQUIPMENT															
Central heating	13,498	8,856	1,459	1,292	759	1,132	8,702	7,675	1,027	4,796	1,181	772	980	741	1,122
Piped steam or hot water	3,715	1,534	298	448	463	972	1,414	1,184	230	2,301	350	234	292	463	962
Warm air furnace	9,783	7,322	1,161	844	296	160	7,288	6,491	797	2,495	831	538	688	278	160
Nonentral heating, with flue	37,898	26,658	6,917	2,277	1,304	742	17,556	16,469	1,087	20,342	10,189	6,014	2,147	1,250	742
Nonctrl. htng., without flue; or not htd.	8,691	6,070	1,238	651	481	251	4,982	4,649	333	3,709	1,421	959	625	463	241
Not reported	1,425	876	164	109	116	160	508	482	26	917	394	164	83	116	160
YEAR BUILT															
1945 or later	9,420	8,628	429	137	157	69	7,192	7,027	165	2,228	1,601	264	137	157	69
1940 to 1944	4,995	3,891	343	110	262	389	3,305	3,277	28	1,690	614	343	82	262	389
1939 or earlier	45,564	29,149	8,612	3,974	2,136	1,693	20,734	18,526	2,208	24,830	10,623	6,934	3,534	2,046	1,693
Not reported	1,517	791	397	110	105	114	500	444	56	1,017	347	369	82	105	114

(*Continued on page* 122)

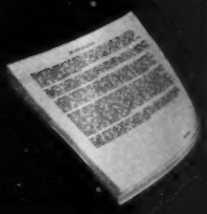
INSTALLING DEALER'S HANDBOOK

REGULATING DRAFT ON LARGE GAS BURNERS IS A NECESSITY

PERFORMANCE TESTS ON FIELD "SNA" INCINERATOR DRAFT CONTROLS

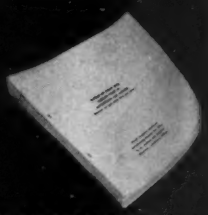


CONTROL OF UNUSUALLY HI DRAFTS AND VERY LOW DRA

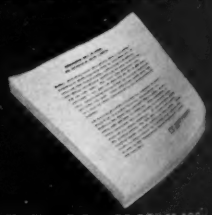


LONG BREECHINGS

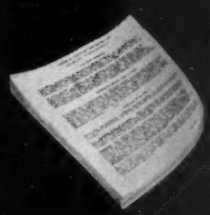
FLUE LOSSES AND EFFICIENCY



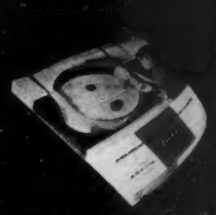
SELF SUPPORTING STEEL STACKS



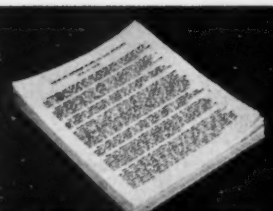
VENTILATION OF BOILER ROOM



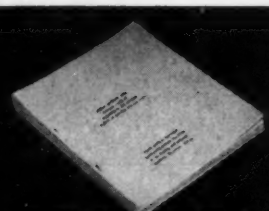
OFF PERIOD LOSSES



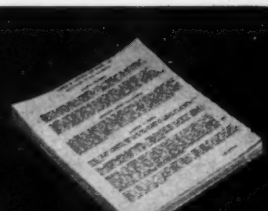
SPECIFICATIONS AND INFORMA FOR ARCHITECTS AND ENGINEE



CALIBRATED ADJUSTMENT WEIGHTS FOR DRAFT REGULATORS



DEMONSTRATIONS OF DRAFT CONTROLS BY "COLD TESTS"



PACKAGED STEAM BOILERS

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BAROMETRIC DRAFT CONTROLS

FIELD CONTROL DIVISION OF H. D. CONKEY & COMPANY

Mendota, Illinois

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Another important reason why Field Controls are first is the constant flow of technical and engineering data coming from our laboratories to assist the manufacturer, jobber and dealer in the proper installation of draft controls.

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FIELD CONTROL DIVISION

By *C. W. Potter*

NOW... ALL HEATING-COOLING CONTROL FUNCTIONS IN ONE CLEAN COMPACT PANEL

General Controls Master Control Panels are Underwriters' Laboratories approved

General Controls' prewired Master Control Panel simplifies installation wiring . . . ties both heating and air conditioning control systems into a single wall thermostat.

General Controls' compact Master Control Panel makes any combined heating and air conditioning installation a clean and simple electrical job. It ties in both operations to one wall thermostat to guarantee trouble-free satisfaction to the serviceman and home owner alike – and does the job so simply that it eliminates countless manufacturing headaches, too.

The secret is its amazing adaptability and size – smaller than any on the market. You can mount it in any position because it is multi poised! You can hook up any combination of motor controls you need! And its simplified wiring saves on engineering, production, and installation costs. Write for complete details today, so you can put this all-star performer in your line without delay.

Also available at your local jobber's for "built up" systems.

1930 25 YEARS 1955 — 1955 GC SILVER JUBILEE YEAR

GENERAL CONTROLS

MANUFACTURERS OF AUTOMATIC CONTROLS FOR HOME, INDUSTRY AND THE MILITARY

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FIVE PLANTS: IRON MOUNTAIN, MICHIGAN • GLENDALE, CALIFORNIA • BURBANK, CALIFORNIA • SKOKIE, ILLINOIS • GUELPH, CANADA

Housing Census Heating Data

(*Continued from page* 119)

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total occupied						Owner occupied			Renter occupied				
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more
Standard Metropolitan Area of Columbus, Ga. — Chattahoochee and Muscogee Counties, also Russell County, Ala.															
All occupied units	38,675	25,965	6,780	3,145	1,940	845	14,590	13,145	1,445	24,085	12,820	5,520	2,990	1,915	840
HEATING EQUIPMENT															
Central heating	7,277	5,009	646	1,004	252	366	3,373	3,231	142	3,904	1,778	504	1,004	252	366
Piped steam or hot water	1,559	796	217	290	84	172	399	379	20	1,160	417	197	290	84	172
Warm air furnace	5,718	4,213	429	714	168	194	2,974	2,852	122	2,744	1,361	307	714	168	194
Noncentral heating, with flue	13,595	9,780	1,977	1,013	631	194	4,088	3,854	234	9,507	5,926	1,774	982	631	194
Nonctrl. htng., without flue; or not htd.	16,190	9,866	3,959	1,128	1,022	215	6,219	5,169	1,050	9,971	4,697	3,045	1,004	1,010	215
Not reported	1,604	1,308	197	...	34	65	904	891	13	700	417	197	...	21	65
YEAR BUILT															
1945 or later	7,129	5,090	718	766	530	25	3,996	3,891	105	3,133	1,199	613	766	530	25
1940 to 1944	5,010	3,055	865	642	324	124	1,752	1,612	140	3,258	1,443	725	642	324	124
1939 or earlier	25,464	17,116	4,883	1,712	1,061	692	8,416	7,281	1,135	17,048	9,835	3,903	1,557	1,061	692
Not reported	1,043	704	314	25	...	...	396	361	35	647	343	279	25	...	...
Standard Metropolitan Area of Huntington, W. Va. — Cabell and Wayne Counties, also Boyd County, Ky. and Lawrence County, O.															
All occupied units	57,540	42,415	8,295	3,975	1,815	1,040	33,425	30,160	3,265	24,115	12,255	5,745	3,350	1,735	1,030
HEATING EQUIPMENT															
Central heating	16,203	12,532	2,127	672	481	391	11,487	10,535	952	4,716	1,997	1,365	482	481	391
Piped steam or hot water	4,385	2,458	1,015	268	294	350	2,134	1,845	289	2,251	613	753	241	294	350
Warm air furnace	11,818	10,074	1,112	404	187	41	9,353	8,690	663	2,465	1,384	612	241	187	41
Noncentral heating, with flue	15,192	11,674	1,939	1,020	374	185	7,917	7,090	827	7,275	4,584	1,248	884	374	185
Nonctrl. htng., without flue; or not htd.	24,803	17,310	4,039	2,175	867	412	13,501	12,090	1,411	11,302	5,220	2,967	1,876	827	412
Not reported	1,339	899	189	107	93	51	519	445	74	820	454	165	107	53	41
YEAR BUILT															
1945 or later	8,162	7,093	622	200	193	54	5,561	5,280	281	2,601	1,813	419	122	193	54
1940 to 1944	2,484	1,774	251	24	110	325	1,522	1,493	29	962	281	222	24	110	325
1939 or earlier	45,589	32,707	7,245	3,529	1,457	651	25,742	22,852	2,890	19,847	9,855	4,956	3,008	1,377	651
Not reported	1,293	839	177	222	55	...	588	533	55	705	306	148	196	55	...
Standard Metropolitan Area of Norfolk, Va. — with Portsmouth and South Norfolk, also Norfolk and Princess Anne Counties															
All occupied units	108,870	53,180	27,165	13,545	8,175	6,805	45,330	38,920	6,410	63,540	14,260	22,240	12,550	7,915	6,575
HEATING EQUIPMENT															
Central heating	42,049	19,793	5,959	4,026	6,057	6,214	19,900	16,746	3,154	22,149	3,047	3,810	3,460	5,829	6,003
Piped steam or hot water	27,500	11,047	4,529	3,039	4,143	4,742	11,839	9,238	2,601	15,661	1,809	2,863	2,493	3,946	4,550
Warm air furnace	14,549	8,746	1,430	987	1,914	1,472	8,061	7,508	553	6,488	1,238	947	967	1,883	1,453
Noncentral heating, with flue	61,100	30,343	19,483	8,860	1,914	500	23,090	20,226	2,864	38,010	10,117	17,021	8,489	1,883	500
Nonctrl. htng., without flue; or not htd.	3,824	1,995	1,134	512	135	48	1,298	1,138	160	2,526	857	1,013	473	135	48
Not reported	1,896	1,048	589	149	67	43	1,042	810	232	854	238	396	129	67	24
YEAR BUILT															
1945 or later	13,455	9,514	1,382	796	773	990	8,241	7,684	557	5,214	1,830	948	706	773	957
1940 to 1944	27,645	12,307	7,246	2,880	3,214	1,998	9,361	9,025	336	18,284	3,282	7,016	2,850	3,171	1,965
1939 or earlier	65,109	29,959	17,976	9,524	4,010	3,640	26,793	21,430	5,363	38,316	8,529	13,816	8,680	3,815	3,476
Not reported	2,661	1,401	563	344	177	176	936	782	154	1,725	619	461	314	155	176
Standard Metropolitan Area of St. Louis, Mo. — St. Charles and St. Louis Counties, also Madison and St. Clair Counties, Ill.															
All occupied units	470,170	230,480	105,260	74,680	35,140	24,610	238,390	190,585	47,805	231,780	39,895	70,480	64,715	32,730	23,960
HEATING EQUIPMENT															
Central heating	314,628	172,259	62,840	40,135	20,179	19,215	186,157	152,006	34,151	128,471	20,253	37,441	33,614	18,338	18,825
Piped steam or hot water	104,099	36,455	23,407	14,624	12,762	16,851	43,514	30,870	12,644	60,585	5,585	14,325	12,374	11,775	16,526
Warm air furnace	210,529	135,804	39,433	25,511	7,417	2,364	142,643	121,136	21,507	67,886	14,668	23,116	21,240	6,563	2,299
Noncentral heating, with flue	127,825	47,065	35,759	29,449	12,344	3,208	42,271	31,419	10,852	85,554	15,646	28,266	26,556	11,927	3,159
Nonctrl. htng., without flue; or not htd.	14,950	6,272	3,690	3,051	1,453	484	5,126	3,903	1,223	9,824	2,369	2,810	2,798	1,396	451
Not reported	12,751	4,875	2,967	2,041	1,163	1,705	4,826	3,245	1,581	7,925	1,630	1,958	1,743	1,068	1,526
YEAR BUILT															
1945 or later	38,423	34,582	1,939	1,442	216	244	32,794	31,902	892	5,629	2,680	1,285	1,228	216	220
1940 to 1944	27,336	21,879	2,102	854	1,265	1,236	20,491	19,735	756	6,845	2,144	1,503	774	1,188	1,236
1939 or earlier	387,217	167,133	96,690	69,799	31,916	21,679	178,960	134,657	44,303	208,257	32,476	64,417	60,449	29,814	21,101
Not reported	17,216	6,900	4,533	2,591	1,743	1,449	6,154	4,301	1,853	11,062	2,599	3,280	2,270	1,512	1,401

Now there are **4**

WETWING HUMIDIFIERS

●

Built to keep your service dept. happy
Priced to satisfy your cost dept.

DESIGNED FOR
LONG TROUBLE-FREE SERVICE

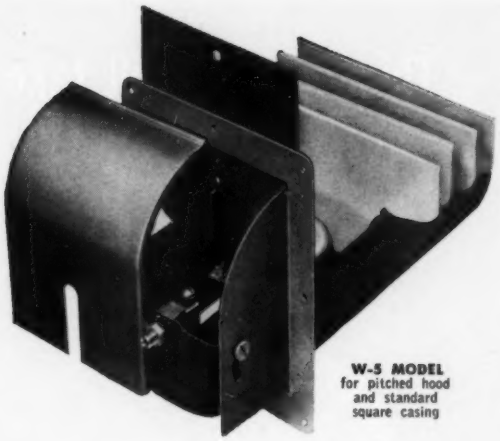
V Check These Features

- **Large Evaporating area**
- **Finest Protection against Corrosive Oxidation**
- **Easy to Install**
- **Minimum Parts - Maximum Strength**

Most trouble free and easily adjusted brass float valve. Convenient adjustment screw on float valve, turns right, to lower water level; left, to raise water level further left, and the large jiffy hook-on type float is released.

Pan, Mounting Bracket and Inspection cover, 19 gauge. Pan is Double Coated with twice baked blue, acid resisting enamel.

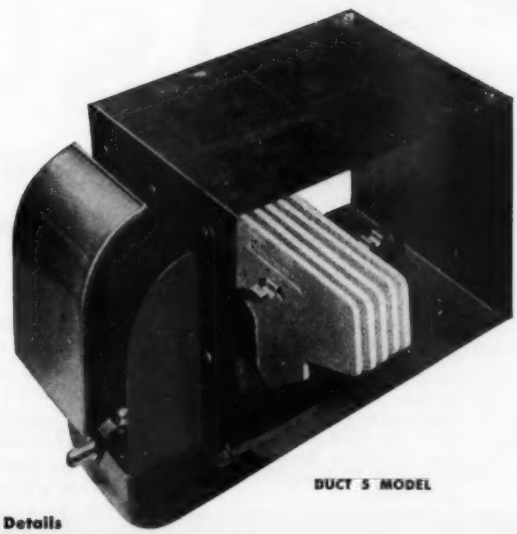
Send for Literature outlining many other Features. Find out Why the WETWING is the Most Economical, Highly Efficient Humidifier on the Market Today!



W-5 MODEL
for pitched hood and standard square casing

GIANT SHORTY MODEL
For Counter-Flo and Hi-boy

PRAIRIE-5 MODEL
For Square Casing only



DUCT 5 MODEL

Call, Write, Wire for Details

ECONO-MATIC PRODUCTS CO., Inc.

11803 GRAND RIVER AVENUE **DETROIT 4, MICHIGAN**

WHEELING SOFTITE®

COP-R-LOY® GALVANIZED SHEETS

Wheeling

Wheeling also manufactures a complete line of Galvanized Furnace Pipe, snap lock or closed seam Perimeter Heating or Air Conditioning Pipe, Style K Gutters, Square Conductor Pipe, Flashing, Valleys, and Fittings.

Bead it, crimp it, fold it . . . put it through any fabricating process . . . the coating on SOFTITE Galvanized Sheets won't chip, crack or flake. That's because SOFTITE is ductile and tight coated to an amazing degree, *the tightest coating produced!*

What's more SOFTITE keeps its bright look, makes jobs look better, easier to please customers.

Put SOFTITE to any test. See for yourself why the demand for SOFTITE has forced Wheeling to triple its production facilities in 1955. Try SOFTITE once and you'll see why actual users call Wheeling SOFTITE the best galvanized sheet yet produced.

For details call the nearest Wheeling warehouse or office.

Galvanized steel does it better... SOFTITE does it best!

WHEELING CORRUGATING COMPANY, WHEELING, WEST VIRGINIA

For your convenience, warehouse stock immediately available at these locations: Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis. Sales Offices: Atlanta, Houston.

NEW EASY TO INSTALL, EFFICIENT

KRITZER

WARM AIR BASE BOARD

Made by the world's largest exclusive manufacturer of Baseboard Heating Products

Write today for **KRITZER AIR BASE** Bulletin No. 700. Learn more about this NEW, quality Warm Air Baseboard.

Kritzer, in the Baseboard Heating field, means the best in materials, design, workmanship, and performance! Now, famous Kritzer engineering and manufacturing provides:

1. The same qualities in **AIR BASE.**
2. A profit-making product to warm air jobbers and dealers.

KRITZER AIR BASE is made of heavy gauge steel for a lifetime of use.

KRITZER AIR BASE is easy to install with snap-on covers and integral balancing damper.

KRITZER AIR BASE design will fit any style of interior.

KRITZER AIR BASE is available in a wide range of standard sizes.

REPRESENTATIVES IN PRINCIPAL CITIES

ASK YOUR JOBBER FOR KRITZER PRODUCTS

KRITZER
RADIANT COILS, INC.

2901 LAWRENCE AVENUE · CHICAGO 25

"IF IT'S KRITZER, IT'S RIGHT, SIR!"

YOU AND THE LAW

When Equipment Becomes Realty...

. . . the dealer may not be able to recover it, according to various court decisions. Satisfaction of the contract agreement is largely dependent on the court's classification of the equipment as a chattel or a fixture and its interpretation of the purpose of the equipment

IN ONE of the eastern states a dealer sold a year 'round air conditioning unit under a contract which provided that title to the equipment, excepting house wiring, ducts and piping embedded in the walls, floors or ceilings, should remain with the dealer until the agreed price was fully paid.

The burner, furnace, fuel tank, blower and motor rested on pedestals on the basement floor. Tubes from the fuel tank to the burner were embedded in the cement. The motor connected to the electrical system, the humidifier to the water supply, and the unit to the duct work.

A few months after installation, with a fairly large balance still unpaid, the seller brought suit for repossesssion of all equipment held by the court to be personal property and not a part of the building and realty.

Unit is Part of Building

The court denied the dealer the right to repossess this unit or any part of it, as it had become a part of the real estate and was beyond the reach of the seller.

"We think that by virtue of the numerous connections between the unit and the real estate and of other considerations to which we shall refer, it must be found that the unit was attached to the real estate," said the court. "The air conditioning unit and central heating plant of a dwelling house is not a piece of furniture. It relates to the building itself."

The dealer, however, by the installation of this equipment, had added to the value of the building and for such increase in value the owner of the real estate was obligated to pay.

In contrast, however, is another decision made by the same court in a dispute over kitchen ranges which a conditional seller sought to repossess from a subsequent purchaser of the building.

"We are of the opinion," said the court, "that the ranges were not annexed to and did not become a part of the realty, that they were no more essential to the enjoyment of the premises than any other ranges that could have been procured as furniture, to replace them." The decision was based on the idea that the ranges could be removed without damage to the premises.

The United States Supreme Court many years ago had before it an action for the foreclosure of a mechanics' lien for the value of machinery that had been installed in a mill. The owner of the property insisted that the machinery had become a part of the real estate.

"This lien," said the court in its decision, "is a creature of the statute and was not recognized at the common law. It may be defined to be a claim created by law for the purpose of securing priority of payment of the price and value of the work performed and materials furnished in creating or repairing a building or other structure and as such is attached to the land as well as the buildings erected thereon. Now, it is not the contract for erecting or repairing the building which creates the lien but it is the use of the material and the work and labor expended by the contractor whereby the building becomes a part of the freehold."

Chattel or Fixture?

The method for the enforcement of such contracts lies either in a recovery of the goods or of the price unless the equipment has passed beyond the definition of a chattel and become part of the building and of the land itself. In that event the mechanics' lien statute of the state furnishes him with a remedy. The selection of the remedy lies in the distinction between a chattel and a fixture.

The rule determining this difference was set out by a New England court a few years ago, in which the equipment involved was held to be a fixture and a part of the realty for which a recovery could be effected by the enforcement of a mechanics' lien.

"In all these decisions," said that court, "is seen at least a tacit recognition of the test applied by the great weight of authority, which involves three elements: (1) the annexation of the article, whether actual or constructive; (2) its adaptation to the use of the realty to which it is annexed, and (3) the intention with which the annexation has been made, whether or not to make it a permanent accession to the freehold."

In cases where the warm air or air conditioning unit becomes a fixture, the dealer must employ a mechanics' lien for his remedy. When the unit remains a chattel, enforcement of the conditional purchase contract is the course to take.

[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]

Matchless Beauty and Performance In Heating and Cooling

Lima

MATCHED

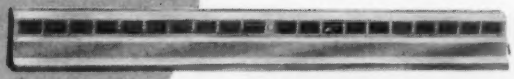
PERIMETER BASEBOARD LINE

HERE — at competitive price — is the finest, most beautiful line of *matched* baseboard units you can install for heating and cooling in new houses and modernization jobs.

All Lima baseboard diffusers and return air grilles have horizontal louvers which harmonize perfectly with the horizontal lines of baseboard, window and floor. All units have the same permanent medium beige finish which saves repainting cost unless requested by the customer. And all Lima baseboards have exclusive features that reduce installation time and labor.

The performance is just as outstanding. The Lima Baseboard Diffuser assures efficient air diffusion spread evenly over a wide area regardless of velocity or damper setting. Reasonably high velocity and correct vertical angle induces recirculation of air within. room for gentle, imperceptible air motion.

It costs no more to give your customers the matching beauty, extra sturdy construction and matchless performance of Lima Matched Baseboard Diffusers and Return Air Grilles. Ask your wholesaler or write direct for literature and prices.



Series 70

DIFFUSER with rattle-free built-in automatic pushbutton damper.

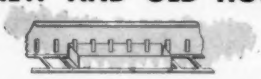
Series 75

DIFFUSER without damper, for economy installations.

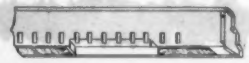
Series 77

NEW RETURN AIR GRILLE with maximum free area, for matching beauty and performance.

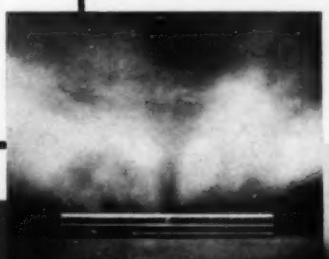
FASTER INSTALLATIONS IN NEW AND OLD HOUSES



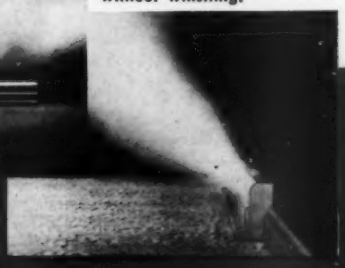
Boot can be quickly located any place along bottom of diffuser or grille without expensive cutting. Base has pre-cut boot openings separated by easily removable ⅜" mullions and boot fastening clips stamped in back section to hold boot in place.



Steel strip furnished with diffuser unit to seal openings not used. The entire operation is done in a jiffy.



Smoke test photos show full fan-shaped blanket of air spread over wide area. Air pattern holds constant even at low cfm delivery, and velocity remains uniform without whistling.



See You Nov. 30th In New York At The 42nd Annual Convention National Warm Air Heating and Air Conditioning Association

Lima REGISTER CO. LIMA, OHIO

INDOOR COMFORT

Lima Quality Diffusers, Registers and Grilles Are Sold Exclusively Through Heating Wholesalers and Manufacturers.

Did you ever

really doubt it?

Quality Sells

ROUND OAK HEATING

Round Oak has been a famous name in heating since 1871. Highest quality has made that history possible . . . it's the kind of quality that sells customers Round Oak heating equipment, the kind that makes a customer your friend for life. Built with only one thought in mind — to be the best. The beautiful new Round Oak line is ready now, in either gas or oil firing.

Round Oak helps you sell, too . . .

ROUND OAK CO., INC., Dowagiac, Michigan AA

Rush me full details on Round Oak heating and air conditioning.

Name.....

Company.....

Address.....

City.....State.....

LIKE 58 SALES HANDS

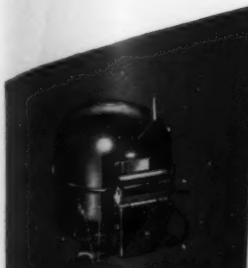
. . . it's the new Round Oak Sales Presentation. This 58-page self-seller will make anyone a salesman . . . make any salesman a star salesman!

Its plastic-coated pages sell the full Round Oak line . . . heating, oil and gas and the great air conditioning line.

Every Sales Presentation is like another salesman on the staff.

PINPOINT COMPRESSOR PERFORMANCE TO YOUR APPLICATION WITH Tecumseh

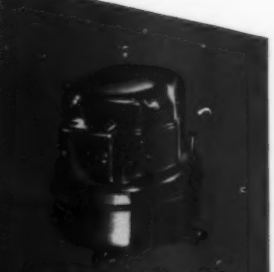
MODEL S3N14 ⅓ H. P.



MODEL S2S16 ½ H. P.

MODELS S7N16
S7R16 ¾ H. P.

MODELS B7616 ¾ H. P.
B1516, B1613 1 H. P.



MODELS B32P16 1½ H. P.
B74T16 2 H. P.

THE ONLY COMPLETE LINE OF HERMETIC AIR CONDITIONING COMPRESSORS

MODEL JA150 1½ H. P.

THE WORLD'S LARGEST PRODUCER OF COMPRESSORS FOR THE REFRIGERATION INDUSTRY

THREE PHASE

MODEL FB500 5 H.P.

SINGLE PHASE

MODELS JB200 2 H. P.
JE300 3 H. P.

THREE PHASE

MODELS JB200 2 H. P.
JE300 3 H. P.

OVER 21,000,000 COMPRESSORS IN USE TODAY

15 compressor models ⅓ thru 5 h.p.

AIR OR WATER COOLED APPLICATIONS

FURNACE UNITS · WINDOW COOLERS · STORE COOLERS · WATER CHILLERS

Tecumseh's complete line of hermetic air conditioning compressors lets you pinpoint the compressor that is "performance matched" to your particular requirements. Engineered and tested to meet the increasing demand for air conditioning, Tecumseh's new line with 15 compressor models offers you flexibility of design, plus quietness and efficiency under the roughest possible conditions. All models deliver full tonnage within the horsepower range and are designed to meet new code restrictions covering power factor and current limitations. The larger sizes are available for single or three phase and by changing only the electrical components the basic compressor can be used for water or air cooled applications. Add these features to compact size, light weight and low cost, and you'll agree it pays to have a choice when your choice is Tecumseh. Write today for Bulletin #100 containing detailed information and specifications concerning Tecumseh's new line of Hermetic Air Conditioning Compressors.

TECUMSEH PRODUCTS CO. *Tecumseh, Michigan*

EXPORT DEPT.— P. O. Box 2280, 24530 Michigan Ave., W. Dearborn, Michigan

quality performance is so important . . . it's guaranteed by Sequoia

FORCED AIR GAS FURNACES AND AIR CONDITIONERS

Original price is a factor, of course. That's why Sequoia forced air gas furnaces are nationally available at competitive prices—reasonable, consistent prices!

But performance quality tells its story just as plainly on any heating dealer's profit and loss statement! In the cost of service call-backs . . . of replacing dissatisfied builder clients . . . and of appeasing trouble-besieged users. Or lack of such costs.

SEQUOIA backs up its claims of quality—every furnace shipped contains the homeowner's printed 10-year guarantee. And that same guaranteed quality now is reflected on the financial statements of hundreds of dealers, coast to coast.

IT COULD BE ON YOUR'S. *You are invited to join this profitable dealer sales organization.*

For full details contact

SEQUOIA MANUFACTURING CO.

1000 BRITTAN AVENUE • SAN CARLOS, CALIFORNIA

"I shot an arrow into the air,
It fell to earth, I know not where."

The Arrow and the Song—Longfellow, 1845

Longfellow a space buyer?

Longfellow's lament could well have been applied to advertising back in 1845. Yes, even up to 1914 when a group of advertisers, agencies and publishers, alarmed by the waste and guesswork in their business, brought order out of advertising chaos by organizing the Audit Bureau of Circulations. These pioneers in circulation auditing established a definition for paid circulation, rules and standards for measuring circulation, methods for auditing and reporting the FACTS. *For value-minded advertisers the era of blind space buying ended in 1914.* ☆ ☆ Today's experienced space buyers use the audited information in A.B.C. reports to aid them in applying media to markets and get full value for advertising dollars. Here are some of the FACTS in A.B.C. reports that provide a sound basis for advertising investments: • How much paid circulation • How much unpaid distribution • Occupational or business breakdown of subscribers • Where they are located • How much subscribers pay • Whether or not premiums are used • How many subscribers in arrears • What percentage of subscribers renew. ☆ ☆ Sales messages go direct to their targets, there's no shooting "into the air" when space buyers base their decisions on A.B.C. FACTS. This publication is a member of the Audit Bureau of Circulations because we want our advertisers to know what they get for their money when they use space in these pages. Ask for a copy of our A.B.C. report and then study it.

SEND THE RIGHT MESSAGE TO THE RIGHT PEOPLE

Paid subscriptions and renewals, as defined by A.B.C. standards, indicate an audience that has responded to a publication's editorial appeal. With the interests of readers thus identified, it becomes possible to reach specialized groups effectively with specialized advertising appeals.

A.B.C. REPORTS—FACTS AS A BASIC MEASURE OF ADVERTISING VALUE

There's a fluid heat unit for every heating problem!

Want high-style units to sell directly to homeowners? Or "frill-free" units for the mass builder market? Either way, you've got 'em both in Fluid Heat! This famous line of top-quality heating equipment includes both gas and oil fired units . . . everything from individual burners to complete boiler units, warm air furnaces and counter-flow units —both floor and suspended models. In sizes for use everywhere—from the smallest homes to the largest supermarkets. And they're all priced *right*, to meet—and beat—your competition!

And a New Air Conditioning Unit!

New Fluid Aire central conversion type unit adds on to any forced warm air furnace. Hermetically sealed . . . extremely compact . . . air cooled. Flexible refrigerant line, connecting evaporating unit to condensing unit, provides for ready adjustable installation. Uses existing plenum and ductwork.

For more information on the complete line, mail coupon below.

fluid heat®
AUTOMATIC HEATING EQUIPMENT
"WORLD'S ECONOMY CHAMPION"
Division of ANCHOR POST PRODUCTS, *Inc.*
Sales Offices and Factories: Baltimore, Md. and Red Oak, Iowa

MAIL COUPON NOW FOR FULL DETAILS!

ANCHOR POST PRODUCTS, INC.
Fluid Heat Division
6720 Eastern Ave., Baltimore 24, Md.

Send me details on the complete Fluid Heat line.

Company Name.....

My Name.....

Address.....

City..... Zone..... State.....

In a hurry for SHEETS or STRIP? *Call us!*

If you're on a tight schedule and can't be held up waiting for delivery, we can help you without sacrificing quality or juggling specifications. Your nearby U.S. Steel Supply warehouse stocks a complete selection of USS sheets and strip and can deliver exactly what you need, where you need it . . . fast. Our stocks include: galvanized, galvannealed, Paint Bond, formed roofing, cold rolled, stainless, hot rolled and aluminum.

You can always count on us for quality, selection and speedy, yet thorough service. The steel we send you has been accurately cut on our modern equipment and arrives in good condition, ready for use.

You can save time, trouble—and money too—by buying *all* your steel from one, dependable source. Call U.S. Steel Supply *first* next time you need steel . . . a little or a lot, common or hard-to-get types.

U. S. STEEL SUPPLY
DIVISION

General Office
208 So. La Salle St., Chicago 4, Ill.

Warehouses and Sales Offices
Coast to Coast

UNITED STATES STEEL

Call U. S. STEEL SUPPLY for ALL your steel needs...

- Sheets and Strip
- Stainless Steels
- Aluminum
- Floor Plates, Industrial Flooring
- Industrial Supplies and Machinery
- Bars—Hot and Cold Finished
- Plates
- Structural Shapes
- High Strength Steels
- Alloy Steels
- Tubular Products
- Reinforcing Bars, Wire Fabric

Free . . .
OUR LATEST STOCK LIST—Contains everything you'll want to know about our huge stocks . . . tells what's actually in stock at our warehouse nearest you. All data is specific, complete, accurate—and easy to find. Send the coupon today for this big, all-new Stock List.

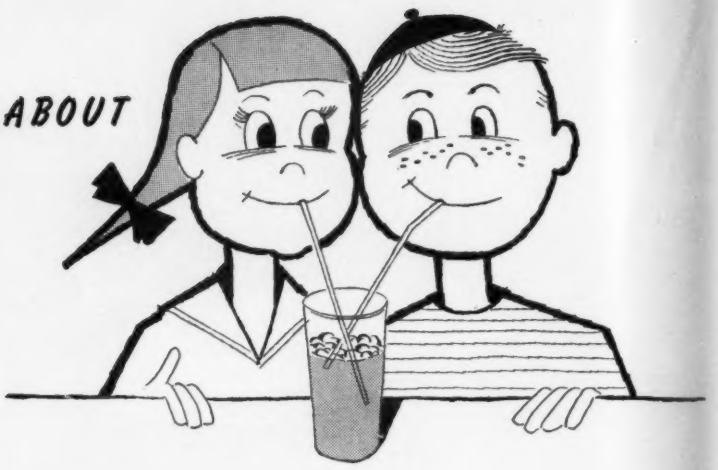
U.S. Steel Supply Division
Dept. 4105
208 So. La Salle St., Chicago 4, Illinois

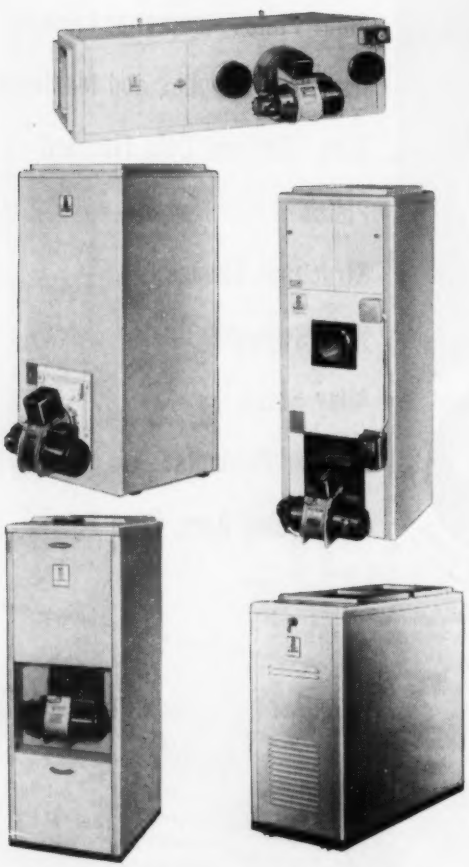
Please send me, without charge, your latest Stock List.

Name .....
Company .....
Address .....
City ..... State .....

EVERYBODY'S TALKING ABOUT

ECONOMY*





* INTERNATIONAL Economy

HEATING PROSPECTS DEMAND MORE for their money these days — *economical* heat — efficient, fuel-saving operation — long years of trouble-free performance. *And* they want a furnace that looks good, installs easy, won't break down and so automatic they don't have anything to do!

MEETING THEIR DEMANDS is a pretty tall order. But *that's where the money is* — in meeting those demands . . . in filling those orders.

YOU CAN DO IT! The new Economy line is the biggest, most complete in 113 years. Oil . . . gas . . . coal . . . complete cooling units— Economy gives you the models, features and ratings to sell and satisfy every heating and cooling need. Get the facts . . . when you've got *everything* to sell with — you sell more!

See your distributor—or write: Dept. A-1055

International Heater Co., Utica 2, New York

Quick pick-up for slowed-up sales

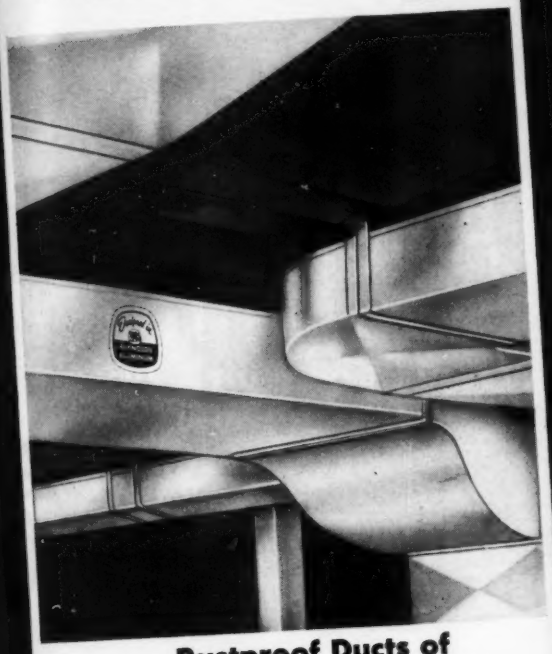
NEW ECONOMY OIL FURNACES

- **23 Models**
- **Ratings from 84,000 to 448,000 Btu. Output**
- **Widest Choice of Lo-Boys, "Low" Hi-Boys, Counterflo, Gravity and Horizontals.**
- **Assembled, and Not Assembled Models**
- **10-Year Warranty**
- **All Models Convertible from Oil to Gas**
- **Stainless steel, trouble-free Combustion Chamber**
- **Famous Economy Oil Burner designed for each unit**

The Finest in Home Heating since 1842...complete cooling, too.

INTERNATIONAL Heater Co., Utica 2, N.Y.

Important MARK OF QUALITY in the Home You Buy...



Rustproof Ducts of

REYNOLDS ALUMINUM

More important than ever...because today's air conditioning means *moisture condensation* on ducts carrying cool air. That means the danger of rust! Make sure of rustproof ducts...look for this seal that identifies Reynolds Aluminum. Write for free folder that also tells how aluminum speeds air flow, improves efficiency.

Reynolds Metals Company,
General Sales Office,
Louisville 1, Ky.

Designed in REYNOLDS ALUMINUM

Other Marks of Quality in REYNOLDS ALUMINUM

• GUTTERS • FLASHING • WINDOWS • SHINGLES • LOUVERS
• HARDWARE • SIDING • REFLECTIVE INSULATION • AWNINGS
• THRESHOLDS • GARAGE DOOR • STORM DOORS, SASH, SCREEN

See Reynolds new dramatic series "FRONTIER," Sundays, NBC-TV Network.

Making your work IMPORTANT in Home Selling!

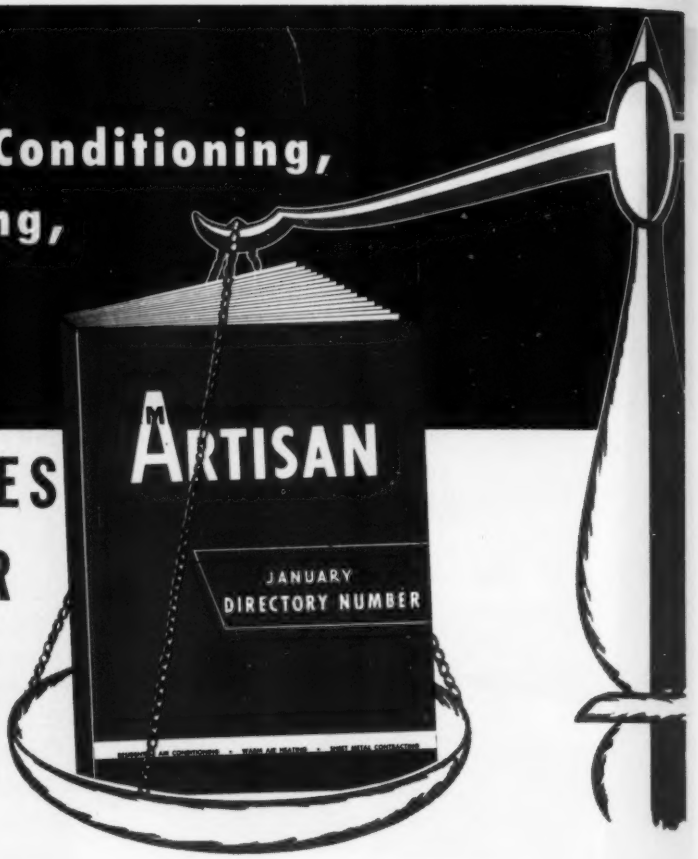
Reynolds featuring of ductwork in this air-conditioned age helps build your industry . . . helps build your own business! Take advantage of this continuing promotion to home-buyers and to builders. For information on free folders and on the "Designed in Reynolds Aluminum" seal, write to Reynolds Metals Company, Box 1800, Louisville 1, Ky.

This ad appears in the October issue of Better Homes & Gardens

REYNOLDS ALUMINUM

See "FRONTIER," Reynolds new dramatic series, Sundays, NBC-TV Network.

If you sell to the Residential Air Conditioning, Warm Air Heating, Sheet Metal Market...



TIP THE SCALES in YOUR FAVOR throughout 1956

Use this field's Accepted Buyers' Guide

By no other means can you accomplish so much at so little cost.

Promoting your products in American Artisan's January Directory Number is a BASIC job — a fact recognized by well over 200 advertisers who take advantage of this opportunity each year.

Dealers, contractors, wholesalers, and manufacturers constantly need up-to-date information on sources of supply. In the most complete form available, they find such data in our Directory Number:

- An alphabetical listing of all products the field uses.
- Names and addresses of the manufacturers.
- All known trade names.
- A guide to the products advertised in this issue and the manufacturers' names.

Here's information your customers and prospects will be referring to throughout 1956 when buying decisions are made. Without question, your product story in this issue will have LASTING sales power.

In addition, as a regular January issue (not a 13th or premium cost number), there will be normal editorial content assuring immediate cover-to-cover attention.

It all adds up to an unequalled opportunity. In American Artisan you have the book that reaches the greatest concentration of buying power — the more progressive dealers and contractors who handle 80% of the available business . . . the book that delivers the only fully paid (ABC) circulation in the field . . . the book that excels in editorial content . . . the book that leads in advertising volume . . . the book that best covers Residential Air Conditioning's acknowledged outlet — the Warm Air-Sheet Metal Dealer.

And in American Artisan's **January Directory Number** you have the added value of an issue designed to promote sales all during the year. Take sufficient space, perhaps a spread, an insert, or multiple pages, to present complete buying information. Regular space rates apply.

KEENEY PUBLISHING . . . 6 N. Michigan, Chicago

ABC AIR CONDITIONING HEADQUARTERS ABP

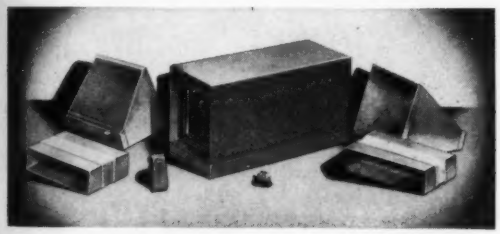
NEW YORK: 1734 Grand Central Terminal CLEVELAND: 737 National City Bank Bldg LOS ANGELES: 672 S. Lafayette Park Place

NOW...you can sell HUMIDITY

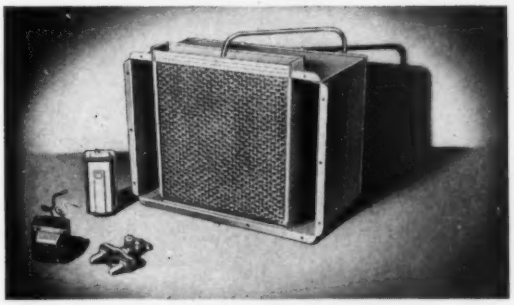
POSITIVELY CONTROLLED—AUTOMATIC HIGH CAPACITY...FOR ANY TYPE HOME

THE NEW RP Aprilaire

AUTOMATIC • ELECTRIC HUMIDIFIER



UNIVERSAL MODEL—installed on or between joists in basement or crawl-space. Flexibility of installation permits baseboard or wall registers.



PLENUM MODEL—for forced air furnaces. Easily mounted on warm air bonnet. Uses plenum heat for evaporation—furnace fan and ducts for distribution of humidified air.

PORTABLE MODEL—no installation necessary. Ideal for offices, apartments—wherever a permanent installation is not desired.

The *proper* relative humidity is no longer a heating season problem! Now, with the new automatic-electric Aprilaire humidifier, you can offer your customers *positively controlled humidity* ...with plenty of capacity...gravity water feed over evaporator...trouble-free service. There's an Aprilaire model for any type home or office—all controlled by positive action humidistat that your customer just sets and forgets... for the right humidity for better health, greater comfort and economy.

SEND IN COUPON FOR COMPLETE INFORMATION

RP ... PRODUCTS OF RESEARCH

RESEARCH PRODUCTS CORP.
MADISON 10, WISCONSIN

RESEARCH PRODUCTS CORPORATION
Dept. 91, Madison 10, Wisconsin

I'm interested in the Aprilaire. Send me more information including literature, prices, specifications and the profit-making proposition.

CO. NAME _____

ADDRESS _____

CITY _____ STATE _____

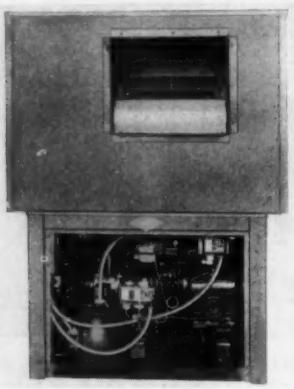
BY _____

EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the application of these products. For additional product information which is available, see this month's New Literature department

Combination Air Conditioner

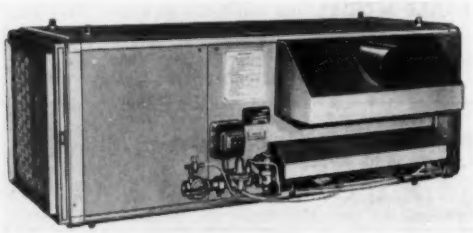
MODEL DA combination air and water cooled air conditioner designed for use with any warm air furnace — Heating and Cooling division, Union As-



bestos & Rubber Co., 332 S. Michigan Ave., Chicago. Available in 2 and 3 hp sizes, the unit has a dual condenser system. Unit normally operates on the air cooled compressor, but when outside temperature reaches 95 F, water cooled condenser automatically switches on. No cooling tower is needed; used water can be used for sprinkling lawns or gardens, the company reports.

Gas Fired Furnaces

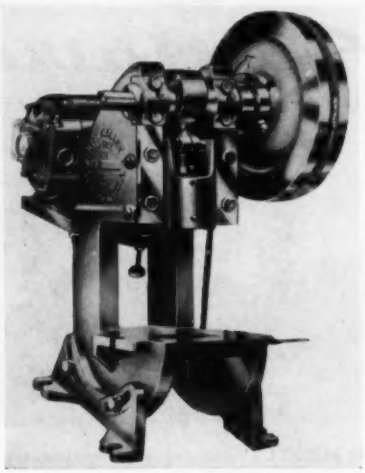
HORIZONTAL GAS fired furnaces in capacities of 80,000, 100,000, 120,000 and 140,000 Btu input — C. A. Olsen Mfg. Co., Filbert St., Elyria, O. Largest model



is 60 in. long, 24 in. high and 27 in. deep. Burner and draft diverter hood can be installed separately or together on front or back of unit; burner can also be installed on the side and at the end for convenience to air discharge and intake ducts and to gas supply. Adjustable flue collar mounted on draft diverter hood can be placed horizontally or vertically, allowing flue vent pipe to be extended at any angle, the manufacturer states. Heat exchanger is comprised of multiple heavy gage steel chambers; slotted gas burners are of die formed sections of steel with interlocking welded joints.

Bench Type Punch Press

MODEL BT-2 two ton open back inclinable bench type punch press for small stampings — Alva Allen Industries, 1001-1015 N. Third St., Clinton, Mo. Production capacity is up to 250 operations per minute



on continuous operation, the company reports; single pin clutch has repeat or non-repeat action. Straight ram guides with flat gib are designed for accurate fitting of dies for precision stamping. Frame can be tilted to desired operation angle; die space is suitable for stamping, shearing, forming, drawing, riveting, blanking and cutting. Weight is 116 lb; standard stroke is 3/4 in. Unit has V-belt drive, uses 1/3 hp motor.

Flexible Hoses

"FLEXHAUST" HOSES and "Portovent" retractable ducts made of coated fabrics and spiral wire reinforcement, containing vinyl wearstrip bonded over spiral wire and at points where hose is exposed to abrasion and damage — Flexhaust Co. division, Callahan Zinc-Lead Co., Inc, 100 Park Ave., New York 17. Wearstrip increases life of lightweight hoses in air conditioning, ventilating and dust collection, fume control and materials handling applications, according to the company. Wearstrip is available

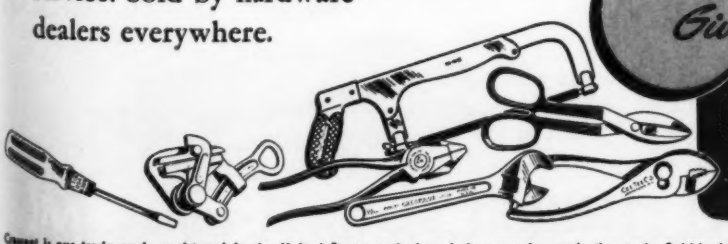
NO FINER WRENCH ANYWHERE!

CRESTOLOY Wrenches are forged from a special alloy steel permitting thinner, trimmer design with greater strength and less weight than conventional adjustable wrenches. Their chrome plate finish is as durable as it is handsome. Choose CRESTOLOY Wrenches for outstanding performance in the toughest kind of service. Sold by hardware dealers everywhere.

8 SIZES IN SINGLE & DOUBLE END TYPES

Number	Size	Capacity
AC14	4"	1/2"
AC16	6"	3/4"
AC18	8"	15/16"
AC110	10"	1-1/8"
AC112	12"	1-5/16"
AC115	15"	1-11/16"
AC118	18"	2-1/16"
AC124	24"	2-7/16"
BC146	same as 4" and	6" above
BC168	" 6" "	8" "
BC1810	" 8" "	10" "
BC11012	" 10" "	12" "

CRESCENT TOOLS
Give Wings to Work
®
Sign of the Artisan
Symbol of Excellence



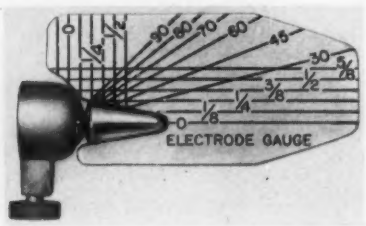
Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by

CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK

for "Flexhaust" hoses in 4 to 12 in. i.d. and for "Portovent" ducts in 3 to 36 in. i.d.

Oil Burner Electrode Kit

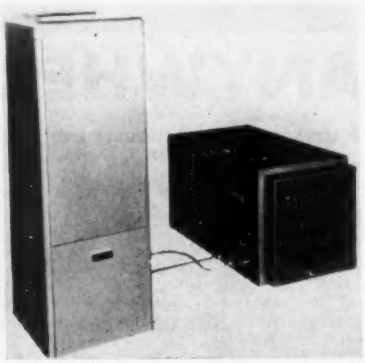
MODEL 3-D electrode kit and electrode benders designed for accurate oil burner electrode settings — Scully Signal Co., 174 Green St., Melrose, Mass.



Addition of vertical lines to the gage itself provides a choice of setting by inch measurement or by degree angles. Large brass knob is designed for positive positioning of the gage on the burner nozzle. Gage and benders are in leatherette snap-button case.

Air, Water Cooled Air Conditioners

EIGHT MODELS of 2 and 3 ton air cooled and water cooled air conditioning units with centrifugal blowers or propeller fans — Perfection Industries, Inc., 7609



Platt Ave., Cleveland 4. Air cooled units have remote condenser section; full rated capacity is delivered at 95 deg ambient temperatures, according to the manufacturer. Water cooled units are said to deliver up to 15 Btu per watt. Two and 3 ton units are identical in dimensions, requiring 22 × 22 in. of floor space.

Outdoor Thermostat Control

AUTOMATIC OUTDOOR thermostat control which relays outside temperature changes to indoor thermostat which compensates for changes before they are noticeable to occupants — General Electric Co., 1 River Rd., Schenectady 5, N. Y. Small wafer of a carbon compound in the outdoor unit senses weather changes and sends a minute electrical signal to the indoor unit, which turns on the furnace.

Deep Throat Punch Press

NO. 15 DEEP THROAT punch press with two handled toggle action and swiveling construction which permits either the head or handles to be rotated 360 deg around the axis of the punch — Whitney Metal Tool Co., 91 Forbes St., Rockford, Ill. Tool is designed for punching jobs where conventional tools cannot be used because of obstructions. Unit has capacity of ¼ in. round hole through 16 gage mild steel. Extra punches and dies from 1/16 in. to 9/32 in. × 1/64 in. variations in size are also available from the manufacturer.

Gas and Oil Fired Furnaces

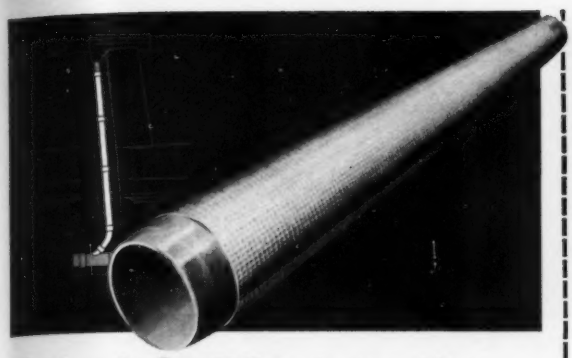
SERIES 551 OIL and gas fired lowboy furnaces in 90,000, 112,000, and 139,000 Btuh at bonnet ratings

— Thatcher Furnace Co., Garwood, N. J. Heat exchanger is of heavy gage steel; automatic humidifier is optional equipment. Units are factory assembled and designed for new homes and modernization jobs, the manufacturer reports.

Double Roof Ventilator

NO. 410 DOUBLE ROOF ventilator with 75 sq in free area — Leigh Building Products division, Air Con-

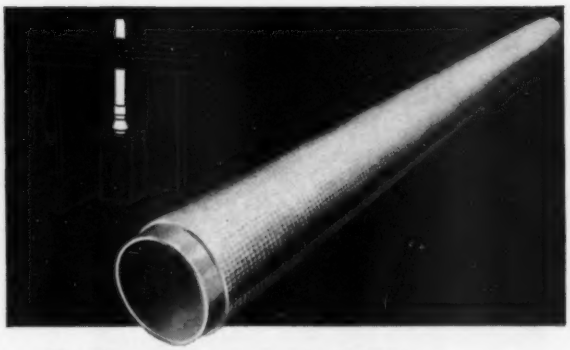
trol Products, Inc., Coopersville, Mich. All aluminum ventilator features two venturi openings side by side



1. Transite® Building Sewer Pipe

with the Ring-Tite® Coupling, for conveying sewage to street sewer or septic tank . . . offers, among others, these advantages—

- Can be assembled without tools
- Can be installed easier, quicker
- All sealing rings already in place
- Protects against root-clogging
- Strong—corrosion-resistant
- Full line of fittings and adaptors

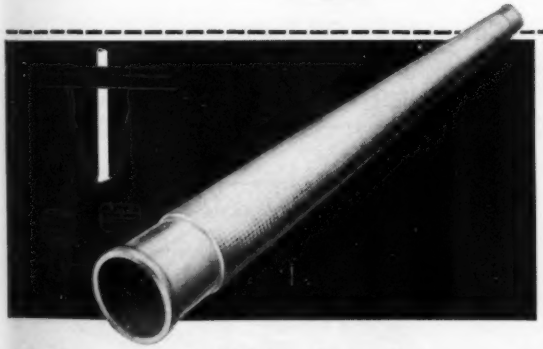


2. Transite Gas Vent Pipe

in round and oval shapes for efficiently and economically venting domestic gas appliances—offers, among others, these advantages—

- Easy to handle on the job
- Tough and strong
- Can be supported anywhere along barrel
- Corrosion-resistant—can't rust
- Full line of round and oval fittings
- Listed by Underwriters' Laboratories

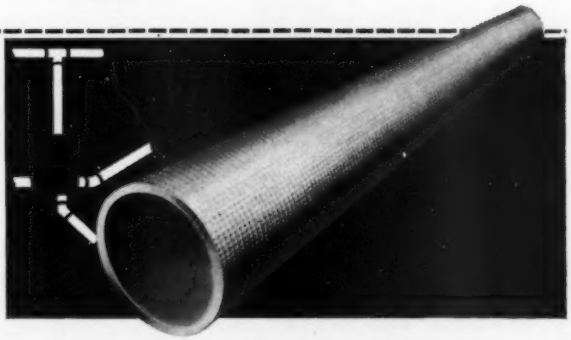
Four Pipes for Four Uses...
Four Pipes for Four Profits



3. Transite Plumbing Vent Pipe

for venting soil and waste pipes in building plumbing systems, offers, among others, these advantages—

- Low initial cost
- Low installed cost
- Neat appearance
- Wide choice of lengths
- Standard calked lead joints
- One length usually sufficient



4. Transite Warm Air Duct

for use in concrete slabs in perimeter-type heating and air-conditioning systems—offers, among others, these advantages—

- No encasement in concrete required
- No tying down
- Simple, efficient joints
- Long lengths
- Will not rot or give off odors
- Weatherproof

These four Transite Pipes for the Home are shown in a new 16mm color motion picture "White Pipe" prepared for plumbing and heating contractors and code officials. Ask how you may arrange to see it. (New literature on all four pipes for the home available on request.) Write to Johns-Manville, Box 60, New York 16, N. Y.

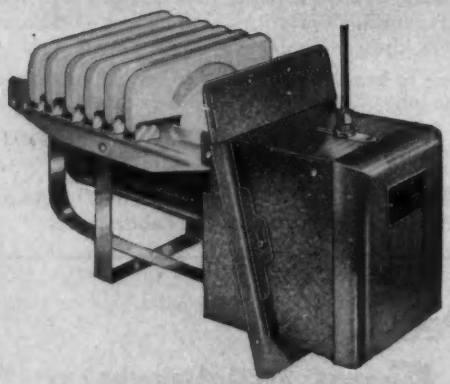
JM PRODUCTS

Johns-Manville TRANSITE PIPES for the HOME

MADE OF ASBESTOS-CEMENT

Say "Goodbye" to Service Calls

Auto flo "100"
AUTOMATIC HUMIDIFIER



A Unique, Original
Principle of Operation

No FLOAT No DRIP No CLOG

The humidifier with the most selling features, for more sales and profits, with less servicing. No moving parts to adjust . . . stick or wear out, guaranteeing years of trouble free service. Evaporator plates with patented drain clips that prevent water dripping. The easiest humidifier to install, only one opening to cut, fits all furnaces —any type bonnet. Factory guaranteed for one year.

ASK YOUR WHOLESALER FOR THE NEW Auto flo FUEL OIL FILTER

AUTO-FLO CORP., 14590 Schaefer, Detroit 27, Mich

Please send me full information on:

☐ Auto-Flo Fuel Oil Filter

☐ Auto-Flo "100" Automatic Humidifier

Name_____

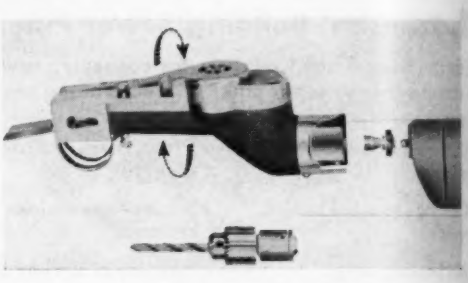
Address_____

City_____ Zone_____ State_____

in the base of the unit; one piece base and weather baffle are designed to eliminate leakage; an 8 in. mesh screen keeps birds and insects out.

Reciprocating Saw

"SUPER SAW" reciprocating saw with direct drive coupling designed as a rigid, non-slipping connection



between saw and drill chuck—RCS Tool Sales Corp., 220 N. Broadway, Joliet, Ill. Saw can be removed from the drill to permit use of the drill for other applications. External appearance and size are the same as previous models; parts are also interchangeable with those on earlier models.

Conversion Oil Burner

MODEL LB-1 conversion oil burner designed to provide efficient combustion within a firing range of 0.5 to 1.5 gph — Heil Co., 3000 W. Montana St.,

Milwaukee 1. Gun type burner has a low pressure fuel pump which can be adjusted to control the firing rate. "Atomization" of oil within firing head permits use of a large orifice designed to keep nozzle free from clogging, according to the company.

Coated Sheet Steel

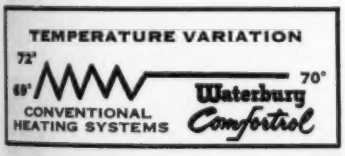
VINYL COATED "3-D" embossed steel in coil or sheet form up to 48 in. wide — Sun Steel Co., 1702 W.

Waterbury heating systems help you sell home owners!

OUT-DATED HEATING SYSTEMS give uneven heat. It's cold at the floor, warm in middle, hot at the ceiling.

WATERBURY COMFORTROL gives only one degree of temperature variation between floor and ceiling in homes tested.

Waterbury *Comfortrol* BY PASS HEATING gives constant temperature—No. 1 feature home owners want



A national magazine recently asked its readers what they wanted most in a home. When it came to heating, the overwhelming majority replied, "Constant temperature!"

It's easier to sell home owners on something they already want. And since they want constant temperature, sell them the heating system that gives it to them—Waterbury COMFORTROL.

Waterbury COMFORTROL eliminates ups and downs in temperature because it *continuously* circulates a gentle flow of warm air throughout every room. There never is a feeling of hot and cold. In actual home tests over a lengthy period of time, the temperature between floor and ceiling varied only one degree. Because Waterbury COMFORTROL operates so efficiently, it uses up to 25% less fuel.

Waterbury COMFORTROL has other features home owners want, too. It provides clean, filtered air. Because COMFORTROL provides continuous circulation, air never becomes stale and stagnant. It is an ideal system for combining summer cooling to give year 'round comfort.

SEND FOR FREE 32-PAGE ILLUSTRATED BOOK...

"It Takes More Than Heat to be Comfortable." It's packed with ideas on how to use heating comfort to help sell home owners. Don't miss sales that should be yours. Fill out coupon below and mail today.

WORLD-FAMOUS **Waterbury** FURNACES AND AIR CONDITIONERS

MAIL THIS COUPON TODAY

THE WATERMAN-WATERBURY COMPANY
1122 N. E. JACKSON ST. • MINNEAPOLIS, MINN.

Please send booklet "IT TAKES MORE THAN HEAT TO BE COMFORTABLE"

NAME_____

ADDRESS_____

CITY_____ ZONE___ STATE_____

ANNOUNCING
A New 5-Foot Joint
SUPERIOR
Spee-D-Lok
FURNACE PIPE

A COMPLETE LINE
OF STANDARDIZED
GALVANIZED FITTINGS

● Save your heating contractors still more time, material and money with the new 5-foot length Spee-D-Lok galvanized furnace pipe. The same "tongue-in-groove" locking feature as Superior's popular accepted 2-foot length with the seam running the full 5-foot length of the pipe eliminates tooling and malleting. It's ready for use when they buy it. Just slip the tongue in the groove until it snaps! It cuts without damaging the locking edges. Cartons contain 10 5-foot joints. Superior color gauge system marks every size for quick, easy identification. Write for color chart.

See Your Wholesaler
Write for Our Catalog

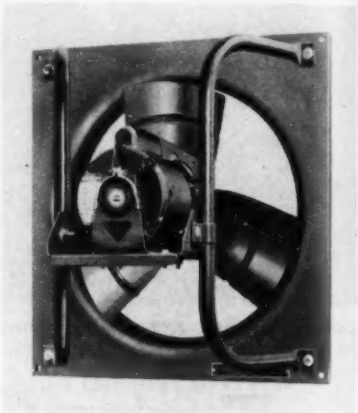
SUPERIOR METAL FABRICATING Company
NILES, OHIO

equipment developments (Continued)

74th Pl., Chicago 36. Vinyl coating is fused to the metal and hardened under about 100 tons pressure, is said to be unaffected by forming, bending, punching or deep drawing. Permanently fused coating is available in any color; embossed patterns are available for many requirements. Metals are mild steel (plain or vinyl coated), stainless steel and aluminum.

Exhaust Fans for Ventilating Systems

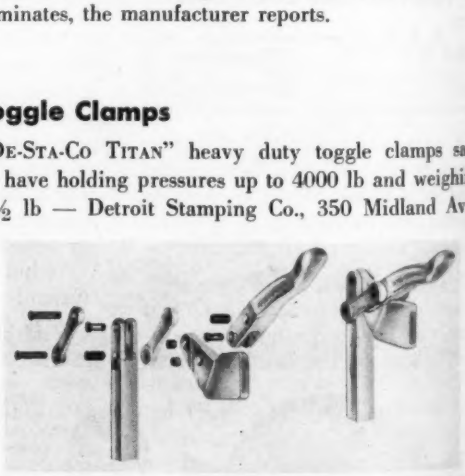
"Model K Ventura" propeller type exhaust fan for ventilation systems in capacities from 587 to 12,800 cfm — American Blower Corp., Detroit 32. Units



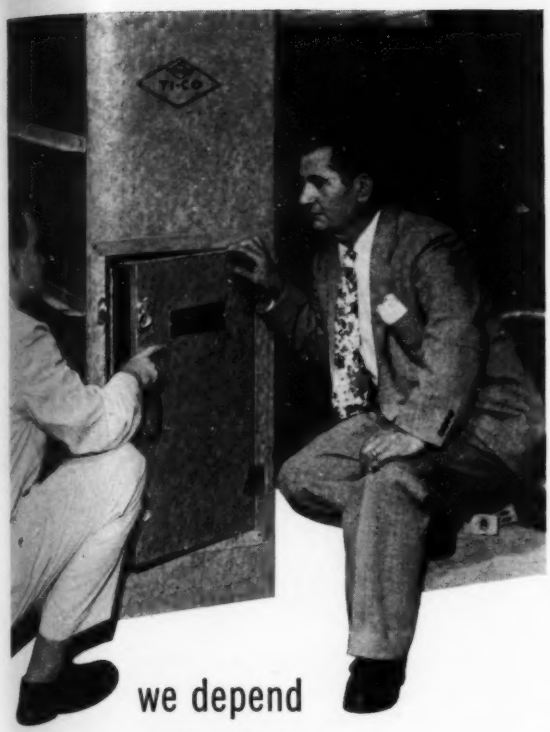
are available with two speed or constant speed, direct drive enclosed motors; units are said to operate against static pressures up to 5/8 in. Streamlined inlet is designed to permit a free flow of air with minimum resistance in exhausting smoke, fumes and other contaminates, the manufacturer reports.

Toggle Clamps

"De-Sta-Co Titan" heavy duty toggle clamps said to have holding pressures up to 4000 lb and weighing 4½ lb — Detroit Stamping Co., 350 Midland Ave.,



Detroit 3. All parts are replaceable; threaded pivot rods and serrated bushings are used throughout, and all forgings are of alloy steel. Each holding bar is milled at top and bottom. Model 557 is designed for limited overhead clearance with low silhouette design



we depend
on **TI-CO**®
for our profit!

—says **H. G. Prizant,** owner and manager of **H. G. Prizant Co.,** heating and ventilating contractors.

"Take this intricate installation in the new University of Illinois Dentistry Building, for example, although the galvanized steel cost less than $10, there was probably about $250 worth of labor in this piece. If the sheets cracked along the lock seams, or even if their zinc coating had flaked off severely, as is often the case when assembling ordinary galvanized, it would have meant redoing the entire job. You can imagine what that would have done to our profit picture."

Mr. Prizant, like all users of Inland TI-CO galvanized sheets for heating and ventilating jobs, praises TI-CO's ability to take the tightest Pittsburgh lock seam without cracking and without the flaking of the zinc coating. He likes, too, the uniformity of TI-CO sheets which gives him the same bending and forming quality and the same bright, spangled finish, for every job.

New Inland TI-CO galvanized sheets . . .

- *non-flaking.* Galvanized by a patented, continuous process, eliminating brittle iron-zinc layer that causes "pot dipped" galvanized coating to flake.
- always uniform.
- costs no more!

Ask your dealer for Inland TI-CO. Look for this stencil on all your galvanized sheets.

INLAND TI-CO®

Write: Dick Killelea, Dept. 252-A

INLAND STEEL COMPANY

38 South Dearborn Street • Chicago 3, Illinois

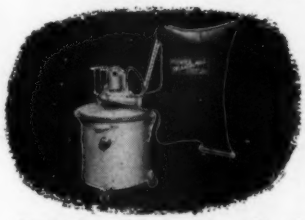
Sales Offices: Chicago • Milwaukee • St. Paul • Davenport St. Louis • Kansas City • Indianapolis • Detroit • New York

now! new SPIC-SPAN

latest, low cost furnace, air conditioning and boiler cleaner

Here's *one* example of what Premier's new Spic-Span gives you: 3 times more filtering area in standard size filter! Money-saving result: Motor lasts much longer, air flow stays stronger, and filter doesn't have to be cleaned so often. At last, a machine that meets the demands of long-time furnace cleaning men at low, low cost! Remember: this is only *one* feature of Premier's new Spic-Span. It would pay you to know *all* the features. Compare Premier's specifications with any other's. (Our specs. are honest-to-gosh true.) For your own best advantage, write for all the details NOW!

"OLD RELIABLE"



Premier 908F — Still the most popular and the most praised of all. Has the working guts and rugged construction for heaviest of heavy-duty jobs. If there is *one* furnace and boiler cleaner you should know all about, this is it! Write Now!

Both Premier machines listed by Underwriters' Laboratories and Canadian Standards Association.

PREMIER

the premier company

755 Woodlawn Ave., St. Paul 1, Minnesota
35 Gerrard St. West, Toronto 2, Canada

The PREMIER Company
755 Woodlawn Ave., St. Paul 1, Minnesota

Please send me more information on your ☐ Spic-Span; ☐ Old Reliable.

NAME_____

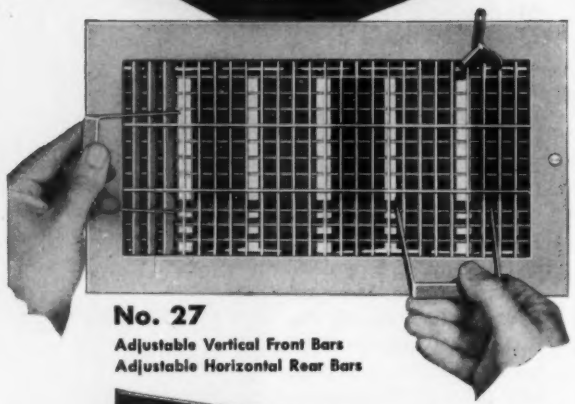
FIRM_____

ADDRESS_____

CITY_____ STATE_____

INDEPENDENT

"Fabrikated"



No. 27
Adjustable Vertical Front Bars
Adjustable Horizontal Rear Bars

Rear View
Showing Volume
Control Dampers

Write for Bulletin
No. 54-A which gives
complete details and sizes
up to 48″ x 24″

Always Leading—
Always Progressing

THE INDEPENDENT
REGISTER CO.
3747 E. 93rd STREET · CLEVELAND, OHIO

equipment developments *(Continued)*

and "flop-over" movement. Model 558 is for production jobs where clearance allows use of upright handle.

Throat Velocity Meter

"FLORITE" VELOCITY METER for measurement of throat velocities on ceiling air diffusers — Bacharach Industrial Instrument Co., 7000 Bennett St., Pittsburgh

8. "Air scoop" inlet fits both circular and square diffusers; readings are obtained by holding the open end of inlet against the diffuser outlet. Instrument's range is 0 to 2500 fpm. Unit is designed for balancing newly installed systems to produce air distribution equal to design performance.

Year 'round Air Conditioners

COUNTERFLOW MODEL year 'round air conditioners in 2 and 3 ton sizes, air or water cooled and gas or oil fired — Crane Co., 836 S. Michigan Ave., Chicago 5. Field joining of union valves connects two basic parts which are charged with refrigerant at the factory, making it unnecessary to pump down, dehydrate and charge the system, according to the company. Twin compressor with two stage operation is featured — one of the two systems is operating most of the time. Gas burning unit has single port gas burner; oil burner is dynamically balanced.

Trunkline Mounted Humidifier

MODEL 760 HUMIDIFIER featuring all-over air flow action around "Vapoglas" plates designed for efficient operation — Skuttle Mfg. Co., Milford, Mich. Unit is said to maintain low pan temperatures to minimize clog and lime in the water. "Vapoglas" plates give up to 912 sq in. of evaporating area, the company reports. Model is mounted in the supply trunkline to save installation time.

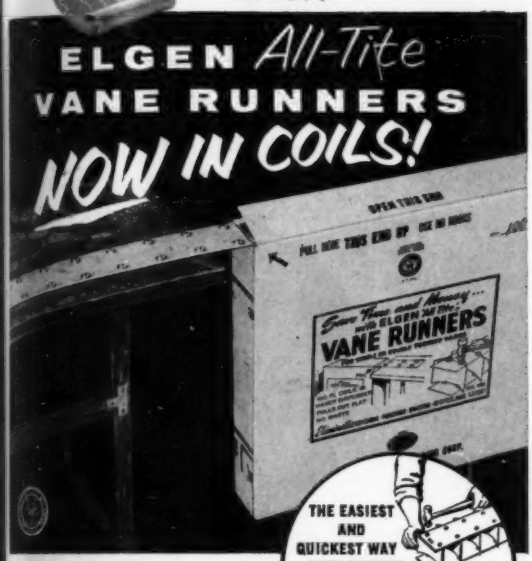
Flush Clip for Insulation Pins

"GRAHAM FLUSH CLIP" for use with impaled insulation — Johns-Manville, 22 E. 40th St., New York 16. Clip fits over the pin which is welded to the

put *Extra-Profits* in your pocket with

"engineer-approved"

ELGEN *All-Tite* VANE RUNNERS *NOW IN COILS!*



THE EASIEST AND QUICKEST WAY EVER DEVISED

for installing single or double blade turning vanes in square elbows. No special tools required.

New production machinery of our own exclusive design, now enables us to produce button type Elgen All-Tite vane runners in continuous coils, effecting a savings in *your cost per job.*

COILED ELGEN ALL-TITE VANE RUNNERS MEANS . . .

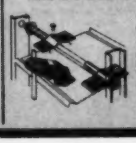
- *Less Waste!* Waste pieces due to short ends are a thing of the past. Vane runner metal is coiled in 100 foot lengths, you just pull out the exact footage needed.
- *Easier Storage!* Each coil weighs approximately 50 lbs. and is packed in a box 28" x 28" x 5". Box fits easily under bench or against wall.
- *Easier Handling!* No loose pieces lying around to get in the way or collect dirt.
- *Unrolls absolutely flat!* Vane runner metal emerges from the box at bench height . . . absolutely flat . . . ready for use.

TWO MORE ENGINEER-APPROVED ELGEN PRODUCTS THAT SAVE YOU TIME AND MONEY

ELGEN SILENT DUCT

. . . for forming "flexible" duct connectors. A one piece metal to material unit, packed in coils, unrolls absolutely flat. Makes on the spot work a cinch.

ELGEN DAMPERSET



. . . for multi-blade dampers, parallel or opposed. Most perfect damper hardware developed.

ELGEN PRODUCTS ARE SOLD THROUGH LEADING JOBBERS EVERYWHERE.

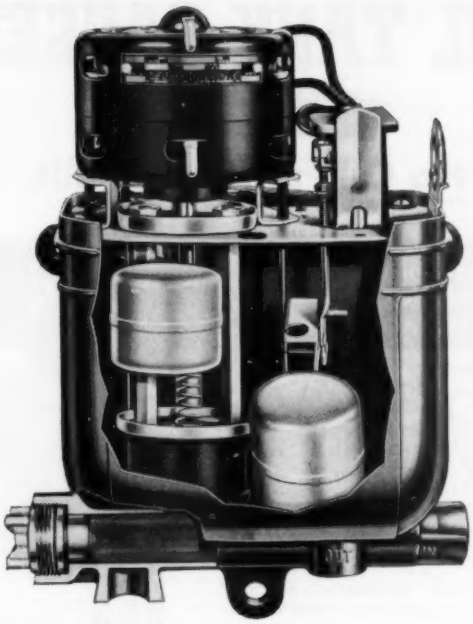
Write today for free catalog and "spec" sheet!

ELGEN MANUFACTURING CORP.

47-34 39th Street, Long Island City 4, N. Y. Dept. A-10

BIG LIFT

for heating plants with a remote tank



Only Model 356

A-P OILIFTER

offers your customers all these features

Oilifter lifts fuel oil from basement or remote storage tank — to the first floor, second floor, or *as much as 25 feet away from heating appliance.* Feeds and keeps one or more oil burning appliances supplied at all times. Operates *automatically!* Check these additional features:

- **Complete freedom from fuel handling and spillage** — no waste.
- **Simple to install** — Mounts with 3 screws. Only one ¼" O.D. copper tube needed.
- **Simple to operate** — Turn on at beginning of season—no further attention. No radio or TV hum.
- **No overflow** — Safety float protects against overflow. Built-in strainer traps dirt.
- **Pumps No. 1 or 2 fuel oil** — 3 gph at 25 ft. lift and 4½ gph at 10 ft. lift.
- **Listed by Underwriters' Laboratories** — Guaranteed by A-P Controls Corporation.

Order from your distributor, or write:

for Air • Liquids • Gases • Refrigerants

DEPENDABLE *Controls*

A-P CONTROLS CORPORATION

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ROCHESTER UNIVERSAL OIL TANK GAUGES

Guarantee

No Oil Fumes or Spills

LEAKPROOF, MAGNETIC—no shaft hole in gauge head. Non-electric, permanent magnet transmits float arm movement into dial movement.

LOW COST—complete installation—no additional servicing. No seepage or smelly oil fumes means more profits for you.

EASY TO INSTALL—merely screw in adapter, bolt on gauge. No adjustments necessary regardless of oil level.

LARGE DUAL DIAL—just turn gauge to mount at either end or center of tank.

NO DISCOLORATION—no fumes or seepage reach gauge head to discolor dial or crystal. Easy to read, permanently clear for years.

ACCURATE—sensitive pivot bearing coordinates response of rotating dial to any movement of float arm.

GUARANTEED—in material and workmanship, and in customer satisfaction.

UNDERWRITER APPROVED—safety factor far exceeds the requirements of the Underwriters. The model 3175 Gauge withstands tank pressure of 200 pounds per square inch.

IHO

Stocked by Leading Wholesalers Everywhere—or write to Rochester Manufacturing Company, Inc., 8 Rockwood Street, Rochester 10, N. Y., U. S. A.

ROCHESTER MANUFACTURING COMPANY, INC.
DIAL THERMOMETERS · GAUGES · AMMETERS
ROCHESTER DEPENDABLE ACCURACY GAUGES

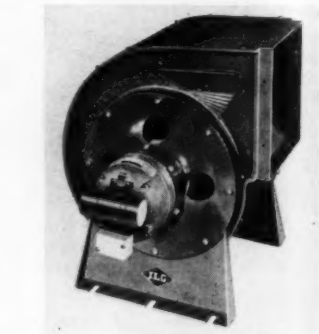
8 ROCKWOOD STREET **ROCHESTER 10, N.Y., U.S.A.**

equipment developments (Continued)

metal duct. When pushed home, clip is flush with the insulation for unbroken surface on exterior of air conditioning duct insulation. Sharp projections are eliminated, protecting personnel and guarding against puncture and tearing of vapor barriers, the company states.

Centrifugal Fans

TYPE BC CENTRIFUGAL fan with backward curved aluminum airfoil blades designed for operations up to a maximum tip speed of 13,500 fpm — Ilg Electric Ventilating Co., 2850 N. Pulaski Rd., Chicago 41, Ill. Blade design is said to produce freedom from air flow separation at normal working pressures; resulting elimination of open vortex region on underside of the blade is designed to enable fan wheel to develop high peak efficiencies and to minimize noise. Overhung fan wheel provides free inlet area; housings can be rotated for changing discharge arrangement. Six sizes are available with dual voltage direct connected motors. Optional equipment includes variable air controller, cleanout door in housing scroll and drains for removal of condensate.



Portable Electric Hack Saw

SELF-POWERED portable electric hack saw designed for making straight, circular and random cuts in most building materials — Key-Hak division, Pro-

equipment developments *(Continued)*

ducers and Distributors, Inc., 1321 Hanover Ave., Allentown, Pa. Measuring 15½ in. and weighing 6¾ lb., the unit is designed for close quarter work such as cutting openings for ductwork. Forward positioning of pistol grip handle permits close control; all 360 deg cuts can be made without changing hand positions. Featured are 2500 stroke per min reciprocating action; a 9/16 in. diameter shaft; three ball bearings in drive and crank mechanism; and sealed-in lubricant.

Water Heater Thermostat

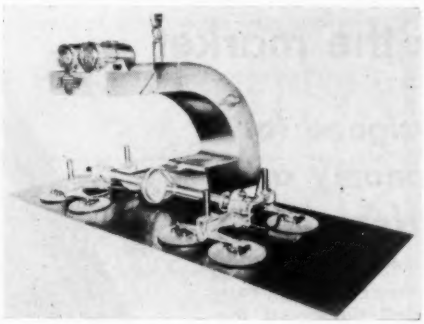
MODEL C-100 "Tankmaster" water heater thermostat, restyled from Models C-40 and C-50 — Titan Valve & Mfg. Co., 9913 Elk Ave., Cleveland, O. Unit retains features of predecessors, with added feature of modern styling, all metal parts and dials, shell molded body castings, main valve accessibility through hex cap and main gas and pilot gas adjustments, according to the company.

Coiled Vane Runners

"ALL-TITE" BUTTON type vane runners coiled in lengths of 100 ft which emerge at bench height from the box flat and ready for use — Elgen Mfg. Corp., 41-34 39th St., Long Island City 4, N. Y. Each coil weighs about 50 lb, is packed in a box 28 × 28 × 5 in. which fits under the bench. Worker pulls out exactly the length needed, eliminating waste footage, the company states.

Vacuum Sheet Lifter

EIGHT CUP vacuum roll-over sheet lifter with lifting capacity of approximately 14,000 lb — Air-Vacuum division, F.J. Littell Machine Co., 4555 N. Ravenswood Ave., Chicago 40. Unit is said to handle any



non-porous material up to 5 × 20 ft weighing 2000 lb. U-hook attaches to an overhead crane; sheets are lifted by vacuum produced by two pumps and con-

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WALL BASE HEATING

However specialized your need for Wall Base Heating, you are sure to find the model and size that exactly fits your requirements in Brandes expanded new line. Three distinct lines and a total of fourteen different sizes to choose from gives Brandes the most complete selection on the market today. With Brandes Wall Base Heating you get the ultimate in beauty and performance . . . at reasonable prices, too!

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THE BRANDES COMPANY

2046 Winnebago Street, Madison 4, Wisconsin

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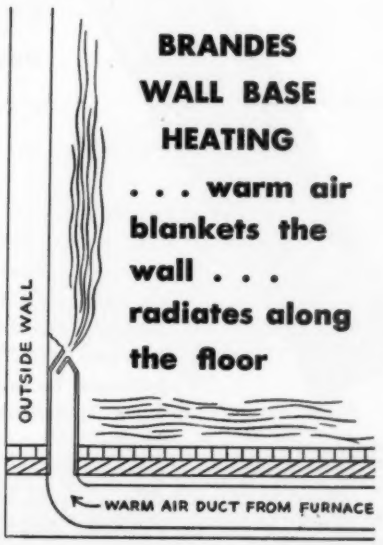

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AIR-TRIM

warm air baseboard

. . . the newest, most competitive warm air baseboard on the market

Designed for Economy and Performance

Top efficiency *plus* economy assured through easy-to-install baseboard that distributes warm air evenly over extended wall areas. Eliminates wall "streaking" and "scorching" of drapes and curtains.

Styled for Beauty

Yes—outstanding in style and beauty because its fashioned after Vulcan's famous TRIMLINE design, the choice of discriminating homeowners.

Designed and Styled to help you SELL MORE . . . PROFIT MORE

The distinctive design helps to make your selling job easier. Smarter looking, more attractive, AIR-TRIM pays you a bonus in increased sales. And its packaged for easy stocking 2, 4, 6, 8 and 10 ft. lengths.

Write now for your AIR-TRIM Bulletin. Data and installation instructions included.

ORIGINATORS OF FIN-TUBE AND BASEBOARD RADIATION IN AMERICA

The VULCAN Radiator Company
775 Capitol Avenue • Hartford 6, Conn.

veyed by tubes through a storage tank to the eight rubber cups. Lifter can rotate the sheet 180 deg, and may be stopped at any angle.

Electric Shears

ELECTRIC METAL shears with cutting capacity of up to 16 gage steel — Mall Tool Co., 7725 S. Chicago Ave., Chicago 19. Stroke length is 3/32 in., with 2500 strokes per minute,

the company reports. Shears are designed with ample clearance to cut up to 0.06 in. thickness. Minimum radius of circle is 1 in.; smaller diameters can be cut in softer and thinner materials by cutting counterclockwise. Switch is operated by squeezing the tool and depressing the paddle, allowing the operator to hold and guide the material with his free hand. Expendable knives can be replaced with carbide tipped parts. Extra knives, screws and wrench are included.

Draft Control

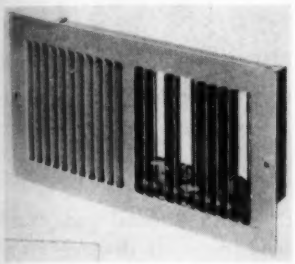
TYPE G draft control in 7 in. size, for 6, 7 and 8 in. flues — Field Control division, H. D. Conkey &

Co., Drawer 11, Mendota, Ill. Control is said to provide a solution to certain gas burner problems;

double acting unit opens inward only when there is an excess of draft, yet retains all the draft a chimney is capable of producing, according to the company. Gate also opens outward at slight pressure to provide relief in case of a blocked flue or downdraft. Unit features stainless steel knife edge bearings to provide sensitivity for the gate without danger of corrosion or fouling.

Air Conditioning Register

MODEL 3R air conditioning register with "flexi-blade" face — Air-Factors, Inc., 1624 Raymond Ave., Monrovia, Calif. Unit features front edge



pivoted construction, ½ in. vanes on ½ in. centers, all flexible for on the job adjustment with opposed blade air volume control. Control is key operated. Welded 20 gage steel construction and sponge rubber gasket are featured. Registers are in a complete range of sizes, according to the manufacturer.

Furnace Cleaner

FURNACE CLEANER with white fiber soot disposal bag — Thompson & Sons, Inc., 8130 W. 47th St., Lyons, Ill. Vacuum unit is 24½ in. high, 18 in. in diameter and weighs 20 lb; aluminum housing has three 3 in. ball bearing casters and rubber bumper. Portable unit is powered by 115 volt a-c or d-c motor. Disposable bag handles up to 12 lb of soot. Other components are 10 ft rubber hose with swivel at each end; crevice tool; round duster brush; 2 ft wand finished in copper, nickel and chrome; 24 secondary

YOU CAN'T BEAT HEATWAVE GAS FIRED FURNACES!

Easily installed HEATWAVE Gas-Fired Furnaces are engineered to provide the best solution to heating problems, **with a more generous margin of profit for you!**

Whether you require central heating systems or floor furnaces, get HEATWAVE for economy plus satisfaction!

EVERY HEATWAVE MODEL:

- √ Factory Assembled
- √ Fire Tested
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- √ Economical Operation
- √ Smart Appearance
- √ Cast Iron Burners
- √ 10-Year Factory Warranty

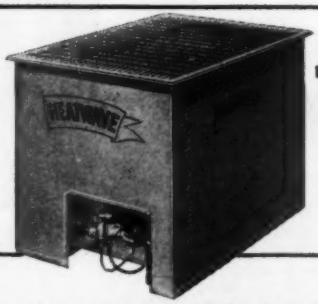
THE HEATWAVE HORIZONTAL

Here's a real space-saver that does the job right! It's ideal for installation in homes without basements, to install in attics, under floors, in service porches, or suspended from joists in homes with basements.

BTU INPUT: 60,000, 80,000, 100,000

THE HEATWAVE FLOOR FURNACE

The last word in quiet operation, efficiency and long life! The Heatwave Floor Furnace has achieved a national reputation for value and service!



BTU INPUT:
27,500
35,000
50,000
65,000
75,000

HEATWAVE

Distributed By Outstanding Wholesale Supply Houses • Write or Wire • Get The Facts!

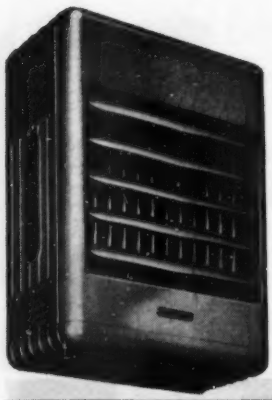
SOUTHWEST MANUFACTURING CO.

BOX 151 • Subsidiary of The F. E. Myers & Bro. Co. • AURORA, MO.

GAS-FIRED UNIT HEATERS

by **Modine**

give you ALL these advantages

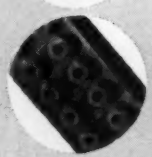


• No other manufacturer offers you rust- and corrosion-resistant stainless steel burners as standard equipment . . . plus a choice of aluminized or stainless steel heat exchangers. And there are many other features for reduction of overall costs. In many instances, for example, the savings a Modine Unit Heater allows in installation costs alone offset any difference in price.

WEIGHT COMPARISON		
Brand	Capacity (Btu/hr. input)	Approx. Net Weight
Modine (aluminized steel)	105,000	105
Modine (stainless steel)	105,000	95
Brand "A"	100,000	170
Brand "B"	102,000	196
Brand "C"	90,000	175
Brand "D"	100,000	165
Brand "E"	100,000	210
Brand "F"	100,000	210
Brand "G"	105,000	170

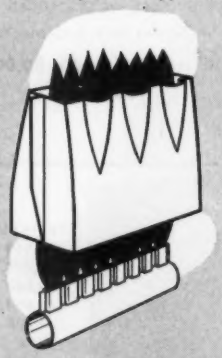
Lower shipping, installation costs
Light weight, without sacrifice of strength or efficiency, makes Modine Unit Heaters easier to handle, faster to install. Also cuts need for expensive support structures.

Modine burner ports



Conventional drilled ports

No port clogging, cleaner burning
Self-cleaning Modine burner ports have four times the free area of conventional drilled ports. Knife-sharp edges prevent lodging of scale.



Faster, more uniform heating
Continuous flame from front to rear of individually fired exchangers, increases radiant heat absorption, uniformly distributes heat through tube.

Easy access for inspection or service
Hinged casing swings down, reveals burners, manifold and pilot light. Complete burner assembly may be removed as a unit.

NEW 12-PAGE BULLETIN 655
gives you complete selection and application data. Call the Modine representative listed in your classified phone book. Or write Modine Mfg. Co., 1580 DeKoven Ave., Racine, Wisconsin.

GU-1269

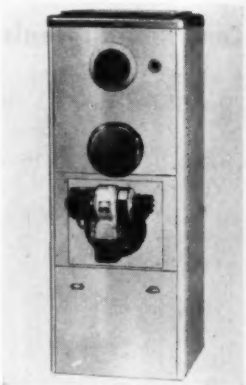
Modine
UNIT HEATERS

equipment developments

filters. Soot is filtered through a primary and secondary filter; increased capacity of bag is said to overcome turbulence and velocity, permitting soot to settle by gravity.

Oil Fired Furnaces

MODELS OH9-88 and OC9-88 oil fired furnaces rated at 112,000 Btu bonnet output — Thermo-Products,



Inc., North Judson, Ind. Standing welded seams are designed for additional strength and tightness. Casing features rounded corners and a two tone baked enamel finish.

Fiber Ducts

FOIL LINED fiber ducts designed for warm air perimeter heating in basementless homes — International Oil Burner Co., Park & Spring, St. Louis 10, Mo. Tubes are imbedded in the concrete slab and are connected to the plenum at the base of the furnace. Aluminum foil lining is employed for improved emissivity and reflectivity, protection against flaking and non toxic qualities, the company reports. Duct is made of tightly wound layers of fiber, laminated with water-resistant glue; outer layer is asphalt impregnated and ends are paraffin dipped. Ducts are said to support over 200 lb per lineal ft; they are in standard sizes of 4, 5, 6, 7 and 8 in. diameters and 12, 14, 16, 18 and 20 ft lengths, designed to answer needs for most applications.

new literature . . .

Automatic Controls

APPROXIMATELY 100 new automatic control devices and systems are featured in a 96 page control catalog — Minneapolis-Honeywell Regulator Co., Heating Div., 2726 Fourth Ave., S. Minneapolis 8. Described are electric, pneumatic, electronic and self-powered temperature control systems; oil, gas, stoker and electric heating control devices; automatic air conditioning, humidity and water heater regulators; and other automatic control devices for home, commercial and other applications. Special attention is given to a warm air zone control system designed for installation in areas where a single thermostat cannot provide adequate comfort control. Plug-in controls for portable dehumidifiers, a plug-in thermostat for the control of window air conditioners and various central air conditioning thermostats and control panels are also featured.

ARI Room Air Conditioner Standard

REVISED EDITION of the ARI Standard for Room Air Conditioning, designated Standard 110-55, features a section on rating requirements which ties in manufacturing tolerances with published capacity and other ratings — Air-Conditioning and Refrigeration Institute, 1346 Connecticut Ave., N. W., Washington 6. The section on rating requirements is the key provision in the 16 point program for advertising and selling room air conditioners developed recently by ARI and the National Better Business Bureau. Also included in the standard are the minimum power factor values recommended by ARI and the electric utility industry. Pamphlets including the new standard and the ARI recommended cooling load estimate form for room air conditioners may be purchased from ARI for 35 cents.

Products for Heating, Cooling Units

BROCHURE presents information on products for heating and air conditioning equipment — Owens-Corning Fiberglas Corp., 1930 Nicholas Bldg., Toledo 1. Included are design and product data on air filters, insulation, reinforced plastic parts and gasketing material.

Commercial Ventilating Fans

BULLETIN 7214 describes Models B and E ventura fans for commercial and industrial ventilation — American Blower Corp., Detroit 32, Mich. Tables of performance data are included which list electrical power requirements, delivery ratings at different static pressures, fan speed, motor hp, nominal rotor diameter and net weight for each of the eight different sizes in the

*THE SENSATIONAL NEW GENERAL "200" UNIT TYPE HUMIDIFIER will be announced just in time for new profit possibilities in the 1955 heating season. Watch for it—it's a honey!

GENERAL FILTERS, INC.
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Guarantee
Carefree Fuel Supply
in Oil Burner Sales
with combination
VENTALARM® GAUGE
Underwriters' Approved

The famous whistling tank fill signal and easy reading gauge in one money-saving unit. Goes on tank as integral part of vent pipe. Signal case takes the place and saves cost of reducer bushing. One less tank opening needed. One item to install instead of three.

Specify tank depth and opening when ordering.

"BUTTON-LIFT" INSTALLATION
Lifting the button indicator draws cork arm up close to main shaft for easy installation even in partly filled tanks.

or the
SCULLY® GAUGE
Underwriters' Approved

A modern convenience in every way. Big figures, adjustable face, jam-proof lever arm, cork float. Accurate service-free operation.

Specify tank depth when ordering.

and the famous
VENTALARM
T. M. REG. U.S. PAT. OFF.
WHISTLING TANK FILL SIGNAL

Accurate fuel oil delivery without home entry. Truly *automatic* fills for the householder. Makes oil supply as clean and convenient as any other fuel.

A variety of models for new and old tanks.

"Just fill while the whistle blows."

Scully Products are manufactured under U.S. and foreign patents or patents pending.

See your regular Supply House.

SCULLY SIGNAL COMPANY
174 Green St., Melrose 76, Mass.
OHI

Canadian Branch: SCULLY SIGNAL LTD., 286 King St. W., Toronto, Ontario

Model B line and the eight units in the Model E line. Installation drawings give basic dimensions for both models.

Heating and Cooling Equipment

COMFORTABLE LIVING is the theme of a 20 page consumer catalog on "Airline" heating and air conditioning equipment — Ingersoll Conditioned Air Div., Borg-Warner Corp., 760 E. Vine St. Kalamazoo, Mich. The booklet covers gas and oil fired highboy, lowboy, counterflow and horizontal forced air furnaces; gas and oil conversion burners; air and water cooled central air conditioning units in 2, 3 and 5 ton capacities; automatic gas and electric water heaters; and three models of home incinerators.

Flexible Metal Hose

APPLICATION DATA on flexible metal hose products is presented in catalog U-333 — Universal Metal Hose Co., 2133 S. Kedzie Ave., Chicago 23. The hose is available in several metals including bronze, carbon steel, monel, nickel and stainless steel.

Prefabricated Duct and Fittings

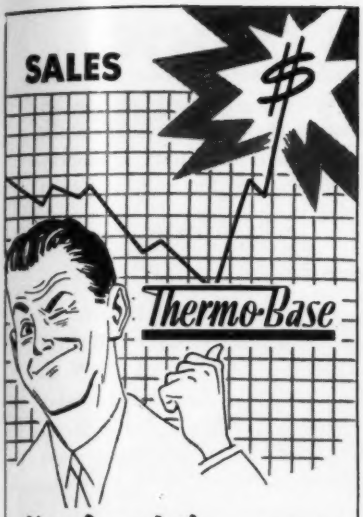
STANDARDIZED DUCT and fittings for heating and cooling installations are covered in "JusRite" catalog 114 (26 pages) — Corbman Bros., Inc., 25th and York Sts., Philadelphia 32. Illustrated are various types of heating systems that can be installed with standardized duct and fittings including simplified extended plenum, extended plenum round, and perimeter radial and loop systems. Also included is a section on perimeter and ceiling diffusers, registers, grilles and faces.

Blower Installation

PROCEDURES FOR INSTALLING blowers in heating and air conditioning equipment are presented in an eight page, pocket size folder — The Brundage Co., North Park St., Kalamazoo, Mich. Designed to keep service calls to a minimum, the booklet covers such subjects as alignment, measuring belt tension, checking the thrust collars on the wheel shaft, oiling, and placing the filters.

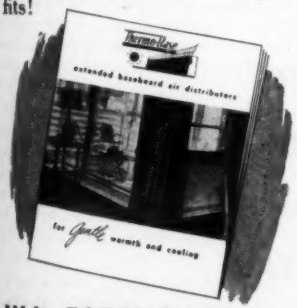
Bar Stock Parters

MANUAL illustrates the operation of "Di-Acro" rod parters designed to cut round, square, rectangular and hexagon bar stock without rough edges or burr — O'Neil-Irwin Mfg. Co., 501 Eighth Ave., Lake City, Minn. The manual points out the various types of stock that can be parted such as cold rolled steel, chrome molybdenum, stainless steel, full hard copper, brass, aluminum, etc. Material up to 5/8 in. can be



I've found the secret - have you?

All over America dealers are changing to *Thermo-Base warm air baseboard distributors.*
You, too, will be glad you found the secret of Thermo-Base. And no wonder! Only *genuine* Thermo-Base takes the forced air "feel" *OUT* of the forced air system.
Thermo-Base provides dealers with special FREE Promotion Aids. This hard-hitting program has been designed to make *more* Thermo-Base sales for YOU. Quote Thermo-Base on every job and you'll find the secret of extra baseboard sales *and* profits!



Write TODAY for this new FREE SALES CATALOG

We'd like to show you more important reasons why there is no economical substitute for genuine Thermo-Base. Send today for this new FREE Catalog that contains a revolutionary new method for figuring installations. It is extremely simplified and completely safe for figuring heating in residential jobs.

GERWIN INDUSTRIES, Inc.
Dept. 11
Michigan City, Indiana

Skuttle

ALL-OVER AIR FLOW gives you an EXCLUSIVE sales advantage

Skuttle
Model 760
VAPOGLAS
TRUNKLINE HUMIDIFIER

Complete all-over air flow on plate surfaces means more efficient operation.

Maintains lower pan temperatures. Less lime in water. Less clog.

Up to 912 sq. in. of evaporating area with Vapoglas plates. Means more efficiency.

Easily mounted in trunkline. Saves more time.

For further information, write to:

Skuttle
MANUFACTURING COMPANY
Milford, Michigan

There's a Skuttle humidifier for every type heating plant

parted on the largest model, according to the company. Specifications and capacities for both hand and power operated models are given as well as lubricating and maintenance instructions.

Portable Flue Gas Analyzers

HOW TO REDUCE FUEL COSTS through the use of flue gas analyzers is discussed in a four page illustrated circular — Thermco Laboratories, Michigan City, Ind. The analyzers also save time for service personnel, according to the company, since they shorten considerably the time required to check a furnace. Five portable models are described, also accessory equipment such as stands and carrying cases.

Asbestos-Cement Duct and Fittings

INSTALLATION and performance advantages of asbestos-cement "Transite" duct for perimeter heating and air conditioning systems are described in a four page circular — Johns-Manville, 22 E. 40th St., New York 16. Applications in both radial and loop perimeter systems are illustrated. Also illustrated are factory-assembled fittings with plain or tapered ends as well as fitting segments designed for field assembly with "Ductite" tape. The duct is furnished in 3, 4, 5, 6, 7 and 8 in. diameters and in 5 and 10 ft lengths.

Cooling Towers

DATA SHEET covers cooling towers carrying a 25 year guarantee on the wetted deck — Fulton Steelcraft Co., Swanton, O. Specifications are given for four models with capacities ranging from 2 to 10 tons. A cutaway drawing identifies components of the unit, and brief descriptive text explains their features.

Oil Burner Electrodes

IGNITION ELECTRODE ASSEMBLIES for oil burners are described in a 20 page catalog (E-55) — William Steinen Mfg. Co., 43 Bruen St., Newark 5, N. J. Data and drawings on assemblies for various makes of oil burners are presented. Also included is information on assemblies that can be modified to meet the requirements of oil burner ignition electrode designs not included in the catalog.

Humidifiers with Corrosionproof Pans

"AQUAMAGIC" HUMIDIFIERS featuring a corrosionproof ovenware glass pan are described in an accordion folded consumer mailing piece — Viking Air Conditioning Div., National-U. S. Radiator Corp., 5601 Walworth Ave., Cleveland 2. Designed to develop sales leads, the folder emphasizes the advantages to health and comfort provided by proper humidity. Photographs detail installation procedures and a line

CONDUCTOR ELBOWS AND SHOES

- ALL SIZES
- ALL ANGLES
- ALL GAUGES
- ALL METALS

"Tapered to Fit"
"Galvanized after Formed"

THE CINCINNATI ELBOW CO.

4730 Madison Rd. Cincinnati 27, Ohio

SEE YOUR JOBBER

WHAT! NO STANDBY LOSS?

THAT'S RIGHT—

LO-BLAST

POWER-GAS BURNER

ELIMINATES THE FUEL WASTE CAUSED BY UNCONTROLLED DRAFT

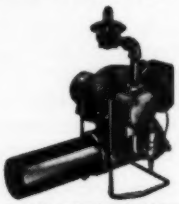
When an atmospheric gas burner shuts off, the rush of draft air through the boiler or furnace carries heat with it up the chimney...causing a serious waste of fuel.

Since a burner is turned on and off several times an hour by the thermostat, a typical heating plant operates only about 2,000 hours of a 6,000 hour heating season. Hence, with an ordinary burner, "standby loss" occurs two-thirds of the time.

In contrast, the Lo-BLAST Power Gas Burner does not depend upon natural draft, but upon air supplied by a small, *quiet* blower. It provides combustion air *only when the burner is on!* When the burner shuts off, only enough air for pilot combustion is admitted. The heating plant retains much of its heat between operating cycles.

That's why Lo-BLAST Burners average 10% less in operating cost. Capacities of 75,000 to 20,000,000 BTU give complete coverage of residential, commercial and industrial fields.

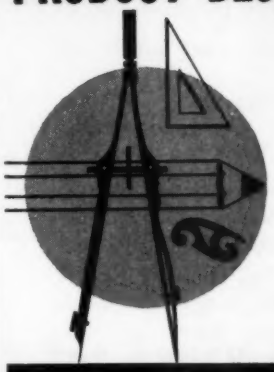
Send today for complete information on the Lo-BLAST Power Gas Burner



Lo-BLAST ECONOMITE
The residential Lo-BLAST Burner—capacities 75,000—500,000 BTU.

MID-CONTINENT
METAL PRODUCTS CO.
1960 N. Clybourn Ave., Chicago 14, Ill.

PRODUCT DESIGN-ENGINEERS



Here's an Important *Service* For You

Let Our Experienced Designers Work With You in Creating Smart, Modern Hardware . . . Engineered to Cost You Less

National Lock design engineers are specialists in creating distinctive hardware to meet your individual requirements. With an extensive background in materials and production techniques, they can help you secure more for your dollar investment. These National Lock stylists will work independently or in cooperation with your own designers. This service covers a wide range of items, including zinc die cast, aluminum die cast, stampings, plastics in both compression and injection molding. Write us for full information on how we can serve you.

Distinctive Hardware all from *1* source

REFRIGERATOR HARDWARE
CABINET HARDWARE
STOVE HARDWARE
FURNITURE TRIM

CASTERS	**BOLTS**	**HANDLES**
KNOBS	**SCREWS**	**HINGES**

NATIONAL LOCK COMPANY
ROCKFORD, ILLINOIS

drawing explains how the unit's water supply controls itself.

Aluminum Alloys

GENERAL PROPERTIES, fabricating characteristics, typical applications and available size ranges of commercial aluminum alloys are described in a three color brochure — Peter A. Frasse & Co., 17 Grand St., New York 13. Also included are alloy designation, weight comparison and temper designation charts.

Oil Burner Motors

FEATURES OF SERIES 991 lightweight oil burner motors are detailed in a two page data sheet — Ohio Electric Mfg. Co., 5400 Dunham Rd., Maple Heights, Cleveland. The bulletin is illustrated with exploded views, performance curves and dimensional diagrams. Ask for bulletin AA-1568.

Air Pollution Control

AIR POLLUTION AND ITS CONTROL through the use of activated carbon is explored in a technical bulletin (E-21) — Barnebey-Cheney Co., Cassady at E. 8th Ave., Columbus, Ohio. The bulletin lists and describes atmospheric contaminants and outlines 10 treatments to reduce or eliminate contaminants in industrial gases.

Sheet and Strip Steel

MORE THAN 20 types of flat rolled steel furnished in coils, stock sizes and cut-to-order blanks are listed in bulletin 20-1 (eight pages) — Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80. Featured in the bulletin is a section explaining how to select the right stock for a specific use. Also described are the company's cutting equipment and other service facilities.

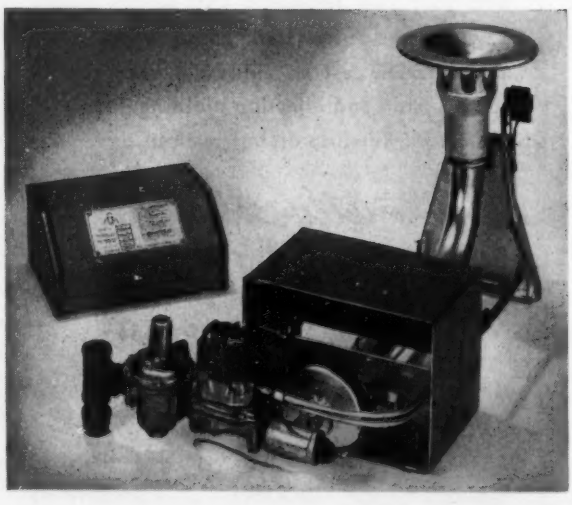
Furnace Vacuum Cleaners

VACUUM CLEANING OF FURNACES and air conditioning equipment is the subject of an industry directed four page brochure — Premier Co., 755 Woodlawn Ave., St. Paul 1. Specifications are given for "Master-Vac" and "Spic-Span" models. A special section covers filters, auxiliary tank kit, furnace cleaning tools and cleaning kit for flues, duct and chimneys.

Punch Presses

PUNCH PRESSES in capacities ranging from 1½ to 15 tons are described in a four page illustrated brochure — Kenco Mfg. Co., 5211 Telegraph Rd., Los Angeles 22.

... here's the new "JET-8"



GAS CONVERSION BURNER

Make this your BANNER YEAR for profits, with Banner's new "Jet-8" Gas Conversion Burner. Many new features help you step up sales and increase dollar volume:

1-Piece Cast Iron Burner Head — The upright posts supporting the flame spreader give best mixture of secondary air and gas mixture for perfect combustion.

Telescoping Venturi — gives you a burner that fits the shortest — or longest — furnaces and boilers.

Minneapolis-Honeywell Powerpile Controls.

Input — 80,000 to 200,000 B.T.U.

Silent Operation.

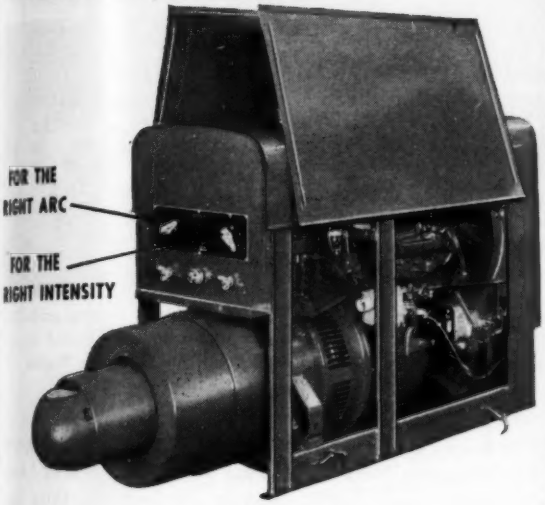
Competitively priced — for more Dealer Profit.

Write today for complete information and prices.

BANNER BURNER COMPANY

227 E. INDIANOLA AVE. Dept. A • YOUNGSTOWN, OHIO

"SHIELD-ARC" SA-200 DUAL CONTROL



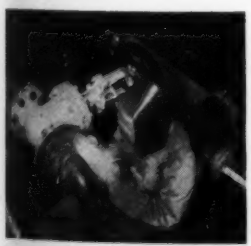
With Lincoln "Shield-Arc" you

PICK EXACT ARC to cut welding costs

HERE'S why more Lincoln SA-200 welders are in use today than any other engine-driven welders in the world:

FAST, SIMPLE DUAL CONTROL assures right type arc and right arc intensity for every job. This means that the operator can suit the arc to the job every time for flat, vertical or overhead welding.

COMPACT DESIGN provides long, dependable service, low-cost operation, highest quality welding.



Welding 6-inch flange *to elbow at the valve in refinery addition using "Shield-Arc" SA-200 with 5/32" "Fleetweld" electrodes.*

Welding 20 foot sections *of ice plant piping with "Shield-Arc" engine driven welder and 5/32" "Fleetweld 37" electrodes.*

SEE FOR YOURSELF. Compare "Shield-Arc's" money-saving features and low cost. Bulletin 1337, giving cost-cutting details, is available by writing on your letterhead.

THE LINCOLN ELECTRIC COMPANY
Dept. 3905 • CLEVELAND 17, OHIO

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

FLEXIFLO

The Diffuser for Every Application

Here's the complete diffuser line with all extra features: built-in equalizing deflectors; easy to install; quick adjustment of air volume and diffusion pattern; simplified engineering; beautifully finished in any color baked enamel.

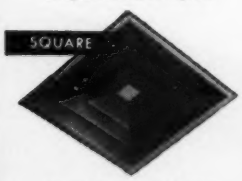
Let our sales engineers show you why Flexiflo is better for your jobs. But first — get the Flexiflo catalog.

Type R, constant flow pattern regardless of volume adjustment.

Type V, fully adjustable air diffusion pattern and volume.

Type MP, for 1-, 2-, 3- or 4-way diffusion to accommodate any shaped area, 16 styles.

Type CH, adjustable for heating, ventilating and cooling.



Type H, adjustable volume, constant pattern and radius of diffusion.

Type S, side wall or ceiling, with Type R or V blades for heating or cooling.

Return this coupon

FLEXIFLO

UNIVERSAL DIFFUSER CORP.
1360 GARRISON AVE., NEW YORK 59, N.Y.

Please send me complete catalog AA

NAME_____

COMPANY_____

STREET_____

CITY_____ ZONE____ STATE_____

THE MOST **PROFITABLE**

FORCED-AIR CONVERSIONS ARE MADE WITH

REX AIR-PAK BLOWER-FILTERS

Switch to **REX** *for...*

- COMPLETE PACKAGE UNITS
- EASIER INSTALLATION
- EXTRA QUIET OPERATION
- SIZES FOR EVERY NEED
- FEWER, COSTLY CALL-BACKS
- BETTER CUSTOMER RELATIONS

WRITE for the profitable story about YOUR market for Rex Air-Pak.

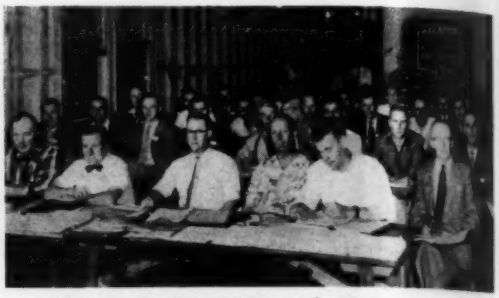
REMEMBER . . . if it's an Air Controls' Product, it's made to make you money!

AIR CONTROLS, INC.

Division of the Cleveland Heater Co.

2310 SUPERIOR AVE. • CLEVELAND 14, OHIO

we hear that . . .



CANADIAN STUDENTS study oil heating problems at the recent advanced course conducted by Boston Machine Works Co. and Steel & Engine Products Limited

▶ THE BOSTON MACHINE WORKS CO., in cooperation with Steel & Engine Products Limited of Liverpool, Nova Scotia, recently conducted a three day advanced oil heating course in the government armory at Liverpool. Students included oil heating men from all parts of the Maritime provinces, and one student came from Newfoundland — a distance of 700 miles. Certificates of completion were presented to 50 graduates at the end of the three day course. The average mark of the graduating class was 87.65 percent.

▶ THE STOCKHOLDERS of Hupp Corp. and Perfection Industries, Inc. have approved the plan to merge the two companies. The Perfection company will now be known as Perfection Industries Division of Hupp Corp.

▶ THE QUICKDRAFT CO. has moved its general offices and manufacturing facilities, formerly located in Hamilton, Ohio, to Canton.

▶ R. S. REYNOLDS, JR. has been elected chairman of the board of Robertshaw-Fulton Controls Co. succeeding his father R. S. Reynolds, Sr. who died last July.

▶ WHEELING CORRUGATING CO. has started construction of a new warehouse and office building to be located at 340-400 27th Ave., N. E., Minneapolis.

▶ PENN CONTROLS, INC. recently held a four day conference of the entire sales organization at the main office and factory in Goshen, Ind. District managers, sales engineers and representatives from sales offices throughout the United States and Canada were in attendance.

▶ THE AIRTEMP DIVISION of Chrysler Corp. is making plans to do 33 percent more business in 1956 than it will do in 1955 and is initiating long-range

TRADE F. Dieckmann MARK

ELBOWS and SHOES

...are DOUBLE RUST-RESISTANT

Dieckmann elbows and shoes are manufactured of Copper, Aluminum, Stainless Steel, and of terne Steel and Iron and hot dipped galvanized after formation.

Dollar for dollar Dieckmann elbows and shoes are the longest lasting and the most economical available to the roofing trade. Order them from your jobber.

The Ferdinand Dieckmann Co.

1180 Harrison Avenue Cincinnati 22, Ohio

Fits where others won't

CENTURY

GAS HORIZONTAL

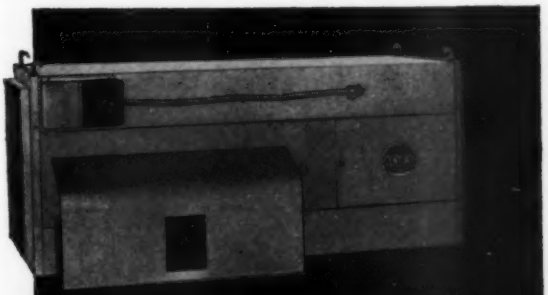
Available in five output sizes

bigger capacities in a smaller, more compact unit

A job getter — permits installation in homes with severe space limitations . . . in attics, utility rooms, basements, crawl space. Five BTU sizes, one for every need.

Efficient, trouble-free — rugged, heavy gauge heat exchanger. Has extended surfaces at hottest portions for additional heating surface to conduct heat directly from burner area. More uniform temperature throughout heating sections . . . increases life of unit.

Easy to install — factory assembled. With horizontal vent which reduces clearance required. Burner can be adapted to either side. *Fits where others won't!*



Sturdy casing. Green hammer effect baked enamel. Five sizes: 65,000, 80,000, 100,000, 125,000, 150,000 BTU. AGA approved.

CENTURY the heating and cooling line that's on the move.

Get all the facts AA

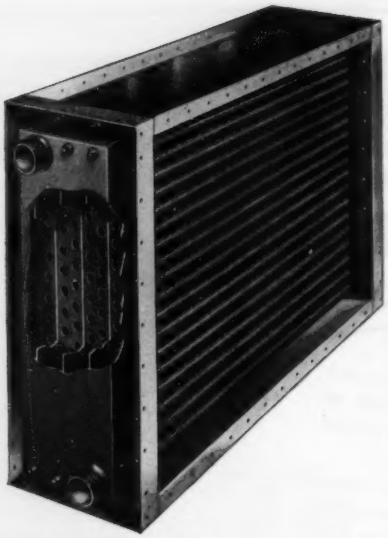
Century Engineering Corp. Cedar Rapids, Iowa

Gentlemen: Please send complete information on your Gas Horizontal models.

Name .....

Address .....

City ..... State .....



AEROFIN

TYPE R REMOVABLE HEADER

WATER COILS

- Complete Drainability
- Easily Cleaned
- High Heat Transfer

Completely drainable and easily cleaned, Aerofin Type "R" coils are specially designed for installations where frequent mechanical cleaning of the inside of the tubes is required.

The use of ⅝" O.D. tubes permits the coil to drain completely through the water and drain connections and, in installations where sediment is a problem, the coil can be pitched in either direction. The simple removal of a single gasketed plate at each end of the coil exposes every tube, and makes thorough cleaning possible from either end.

The finned tubes are staggered in the direction of air flow, resulting in maximum heat transfer. Casings are standardized for easy installation. *Write for Bulletin No. R-50.*

AEROFIN CORPORATION

101 Greenway Ave., Syracuse 3, N.Y.

Aerofin is sold only by manufacturers of fan system apparatus. List on request.

we hear that

(Continued)

programs to handle a similar increase during each of the next five years. In connection with its expansion program the division has appointed a forward planning committee and is extensively enlarging its field training organization. In addition, it has increased its 1956 advertising and sales promotion 2½ times.

▶ STAR DEALERS of York-Shipley, Inc. were honored at a series of regional dealer meetings held recently in York, Boston and Geneva, N. Y. Leading dealers for 1954 were presented with citations.

▶ WILLIAM SEYMOUR, JR., who retired recently as vice president in charge of operations for Joseph T. Ryerson & Son, Inc. has accepted a position as adviser to the Economic Coordinator for Korea. In his new post, Mr. Seymour will work with the Economic Coordinator and the Republic of Korea on planning for the development and rehabilitation of Korean industry, utilities and public works.

The company reports that Merle A. Miller has been elected vice president and treasurer and Raymond N. Carlen has been appointed vice president. Mr. Miller, formerly treasurer and assistant secretary, has been with the company since 1922. Mr. Carlen joined the company's sales division in 1946 and since the middle of this year has been assistant vice president in charge of all plant operations.

▶ REYNOLDS METALS CO. plans to increase its primary aluminum producing capacity to 1.1 billion lb. The bulk of the expenditures for new facilities — about $200 million out of a total of $230 million — will be devoted to the 270 million lb expansion of primary producing and related facilities. The remaining $30 million to be spent under the program will be used for fabricating facilities, principally for the modernization and enlargement of present plants.

▶ OVER ONE THOUSAND GUESTS attended the recent open house held by Dreis & Krump Mfg. Co. Special invitations were made to industry members attending the International Machine Tool Show. Many guests registering with Dreis & Krump came from distant countries. Represented were Canada, Cuba, Mexico and South America.

▶ THE SALES DIVISION of Armco Steel Corp. has organized a new department designed to streamline its service functions. The new sales-service department will combine the functions of the order entry, order schedule, order service, sales record, stock, and claim sections. James G. Wikoff, former manager of the order department, has been named manager of the new department. James E. Lyons has been appointed general supervisor of the entry, schedule and

What a sales story there is to tell about this Majestic Incinerator! And it's told over and over again in the many sales helps Majestic can furnish, all prepared and ready to go to work for you. National advertising is building up a big demand for this *complete home disposal system*—make sure now that you have an ample supply of units and the full Majestic story.

AN EYE-CATCHING MODERN APPLIANCE

INCINERATES ALL BURNABLE TRASH

INCINERATES GARBAGE, TOO

Today's Most EXCITING Modern Home Appliance!

Majestic's Model 10-G Incinerator—designed by a company making incinerators for 25 years—is a big 2-bushel unit, with a gleaming, modern cabinet housing a hooded, dehydrating pilot as well as a full-flame burner—both trash and garbage disappear *like magic!*

MILLIONS of potential prospects will see the full story of Majestic's magic disposal in these and other national publications. Ask your distributor for details.

The *Majestic* Company, Inc.

110-A Erie Street
Huntington, Indiana

Majestic INCINERATOR

Guaranteed Savings on Steel

...guaranteed satisfaction, too!

ROLLED STEEL PRODUCTS can save you over 20% on all your steel needs. Any size, any type, any gauge. No order too small or too big. Immediate delivery.

WE UNCONDITIONALLY GUARANTEE YOUR SATISFACTION ON EVERY PIECE OF STEEL LEAVING OUR WAREHOUSE.

Find out how you can save as 4,020 other firms throughout the country are doing. Call and reverse the charges to us today!

THIS IS A SPECIAL!

Look at this for an example of SAVINGS: GALVANIZED SHEETS
24" x 60" and larger
39,000 lbs. — 20 ga.
56,000 lbs. — 24 ga. $6.45
14,000 lbs. — 26 ga. NET/CWT
16,000 lbs. — 28 ga.

Sized sheets in all gauges available at slightly higher prices.

Rolled Steel Products

Division of Emergency Steel Service Corporation

Distributors of: SHEETS—PLATES—BARS—STRUCTURALS—STRIP

GENERAL OFFICES & WAREHOUSE

7415 St. Louis Ave. Skokie, Illinois

ORchard 3-7400

we hear that *(Continued)*

stock sections. Robert E. Hagen is supervisor of the schedule section, and Luther M. Morrison has been advanced to supervisor of the order service section.

▸ SURFACE COMBUSTION CORP. has concluded a licensing agreement with Moffats Limited of Canada for the manufacture of "Janitrol" heating and air conditioning equipment and "Webster" burners and controls in Canada.

▸ TO MEET GROWING production schedules the Pullman Vacuum Cleaner Corp. has recently moved into a new and larger plant at 25 Buick St., Boston.

▸ SCIAKY BROS., INC. has opened two new sales and service offices — one at 231 Healy Bldg., Atlanta and the other at 709 Bank of America Bldg., San Diego.

▸ WORK HAS BEEN STARTED on Iron Fireman Mfg. Co.'s new manufacturing plant at Ligonier, Ind. and completion is expected in early 1956.

▸ AN OPTION on a 68 acre tract of land near Puente, Calif. has been taken by Carrier Corp. where it plans to erect additional facilities for its Day & Night and Payne divisions located at Monrovia, Calif.

▸ GWILYM A. PRICE, president of Westinghouse Electric Corp., was elected chairman and president of the firm at a recent meeting of the board of directors. Mr. Price continues as chief executive officer. Mark W. Cresap, Jr. was elected to serve as executive vice president and deputy chief executive officer.

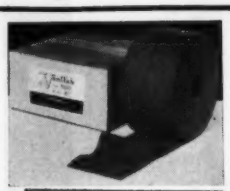
▸ NEW MANUFACTURING FACILITIES, representing 64,000 sq ft of floor space, are being added to the Chicago plant of Rheem Mfg. Co. The new manufacturing space has been made necessary by increased sales of the company's warm air furnaces and residential air conditioning units.

▸ TECHALLOY CO., INC. is now packaging coils of stainless steel strip in disposable cardboard boxes. Workmen find it easier to carry the lightweight coils on ladders and scaffolds, according to the company, and the possibility of injury to workmen below is also considerably reduced.

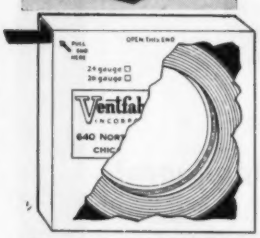
▸ THE WILLIAMS FURNACE CO. has moved into its new plant at 14960 Firestone Blvd., Buena Park, Calif. The new building has a floor area nearly double that of the former facilities and is surrounded by five acres of land which will permit expansion as required.

The Standard of Quality for Flexible Connections

Ventfabrics in rolls 6", 8", and 10" wide for every purpose. Our catalogue gives full information on VENTFAB, VENTGLAS, VENTVINYL, and VENTBESTOS fabrics, and their applications.

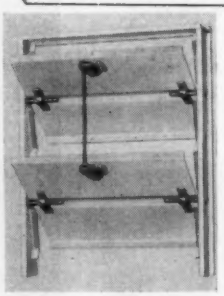


Metaledge Ventfabrics, the prefabricated material for flexible connections with the metal already fastened to the fabric, is particularly convenient for small connections as it eliminates the necessity of fastening the metal to the canvas in the shop.



Our high quality and attractive prices are the direct result of our policy of selling directly to the sheet metal contractor.

Ventfabrics Extra Quality Damper Hardware is of extra weight and fineness. It is designed to save time and labor in assembling either parallel or opposed multiblade dampers.



Write for our catalogue which gives full information and net prices on our products.

Ventfabrics, Inc.

640 NORTH KEDZIE AVENUE • CHICAGO 12, ILLINOIS

One Ring—
or thousands . . .

you'll Gain More with NATIONAL Angle Rings

If you haven't worked with rings rolled by National, you're due for a pleasant surprise . . . for these true rings, guaranteed to fit your job, are:

1. **Accurately rolled with uniform curvatures.**
2. **Easy to fit on the job.**
3. **Punched with the bolt or rivet holes you need.**
4. **Available in the metals you use — carbon steels, stainless steels, aluminum, etc.**
5. **The best value at the best price.**
6. **Ready for immediate delivery in leg out rings in many sizes.**

National rolls to your specifications — angles, channels, tees, rods, flat-bars, pipe and tube — plain, or punched for riveting or bolting.

Tens of thousands of National rings have been used in all parts of the country by large and small sheet metal shops. They are rolled by experts on the most modern high-speed equipment to give you a precision ring at the lowest cost. Write today about your requirements, and the National list of stock sizes and quantity discounts.

Sheet metal fabricating and assembly work is another National specialty organized for YOU. Use it as your stand-by facility.

Phone — Bishop 7-4255

NATIONAL METAL FABRICATORS

2142 S. Sawyer Avenue • Chicago 23, Illinois

CONNOR ENGINEERING CORPORATION

kno·draft®

adjustable air diffusers

QUICK INSTALLATION

QUICK APPROVALS

Kno-Draft *Adjustable* Air Diffusers are so mechanically simple that you can install them in just about half the ordinary time and get your job approvals that much faster. Kno-Draft Diffusers also save you time in figuring your jobs—because they are completely adjustable *after* installation.

1. CUT TIME for installation in half. Simply attach outer cone to duct, then fasten pre-assembled diffuser unit to three suspension bolts.

2. ADJUST AIR DIRECTION *after* installation with just a few screwdriver turns. Discharge can be at any desired angle, from horizontal to vertical.

3. BALANCING the system is easy. The single annular air stream from a Kno-Draft Diffuser permits direct volumetric readings.

4. VOLUME OF AIR is adjusted by a simple twist of the wrist. Just turn the central operating screw to set the damper for any desired volume.

For full information, send for the Kno-Draft Data Book. Connor Engineering Corporation, Danbury, Connecticut.

---------- MAIL COUPON TODAY ----------

CONNOR ENGINEERING CORPORATION
Dept. M-105, Danbury, Connecticut

Please send copy of your 32-page Kno-Draft Data Book.

Name_____

Company_____

Street_____

City_____ **Zone**____ **State**_____

merchandising ideas

▸ THE HEIL CO. is currently filling requests for its third annual heating-cooling dealers' marketing kit. The kit provides dealers with complete information concerning the various types of product literature and promotional aids available to them as well as reference bulletins on many of the phases of retail merchandising.

▸ H-P PRODUCTS, INC. has developed a self-contained, one-fourth scale live fire working model of its conversion gas burner for use by dealers' salesmen. Measuring 7½ × 22¼ × 16½ in. high, the demonstration unit weighs only 40 lb and can be easily transported in a truck or back seat of a car. It burns bottled gas from a replaceable tank and, since it has a built-in self-generating electrical system, requires no electrical connections. The model is furnished with standard controls which the prospect can operate himself.

▸ THE U. S. MACHINE DIVISION of Stewart-Warner Corp. has instituted a "Merchandising Award" program to replace its "Dealer of the Month" award. The new award plaque, recognizing special dealer promotions, was recently presented to N. Palladino & Bros., Pottstown, Pa. for its outstanding promotion at the Pottstown home show.

▸ TICKETS TO COLLEGE FOOTBALL games will be awarded by the Crane Co. to those salesmen who earn the required number of points by lining up new dealers, selling furnaces for display, selling baseboard displays, store signs, job signs, truck and window decals, etc. Top men in each of the company's eight sales districts will receive pairs of tickets and expense money to New Year's Day bowl games.

▸ CARRIER CORP. recently concluded one of the biggest sales incentive promotion campaigns on residential air conditioners in its history. Top prizes in the promotion were two Deluxe Fords valued at $3000 each. Included also were vacation trips to such places as Bermuda, Mexico and Havana, items of famous brand merchandise, and packaged gourmet dinners. During the term of the contest each home "Weathermaker" sold by dealer and distributor personnel earned a certain number of prize points with a corresponding value in merchandise. Prize points could be applied toward one or more items of merchandise, accumulated for a vacation or used toward any type of home "Weathermaker" the salesman might wish to install in his home or place of business.

For greater heating efficiency and savings specify this **NO. P-54 BASEBOARD DIFFUSER**

Here's a new addition to our line for perimeter baseboard installations.

- **Adds beauty to every home**
- **Reduces installation time and labor**
- **Increases heating efficiency and comfort**

Packed in shipping cartons. The 2 ft. and 4 ft. units are shipped assembled and the 6 ft. and 8 ft. units are knocked down. May be ordered with or without dampers.

Look at these features:

● Snap-on feature speeds up installation. ● Separate bottom section simplifies cutting out for stackhead. ● Dampers are made in two foot lengths and operate separately for closer control of air flow at register face. ● The P-54 is designed for both old and new installations and can be assembled before or after finish flooring and plastering.

Ask your jobber for complete details and prices or write direct to:

WRITE FOR YOUR COPY OF CATALOG NO. 553.

THE A & A REGISTER COMPANY
8327 CLINTON RD. CLEVELAND 9, OHIO

Save Time... Labor... Material

with **BEVERLY**
metal cutting
SHEARS

throatless SHEARS

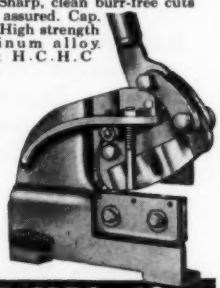
Make any cut—straight, irregular, curved. Exclusive design permits turning work any direction while cutting. 4 models—cap. to 3/16".

Inside SLOTTER

Makes cuts up to 8" inside edge of sheet. Sharp, clean burr-free cuts always assured. Cap. 16 ga. High strength aluminum alloy body; H.C.H.C blades.

slitting SHEAR

New "SS" Series—easier cutting with compounded linkage. 3 models—cap. to 1/8"; trimming capacity to 1/4" mild.



See your Beverly Distributor. Write for FREE illustrated Bulletin.

Beverly SHEAR MFG. CO.

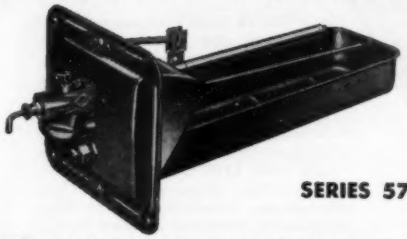
3020 W. 111th STREET • CHICAGO 43, ILLINOIS

COMPLETELY ASSEMBLED

Vaporite

AUTOMATIC HUMIDIFIER

OFFERS QUICKEST – FASTEST INSTALLATION
ADJUSTABLE TO SLOPING OR STRAIGHT BONNET FURNACES



SERIES 577

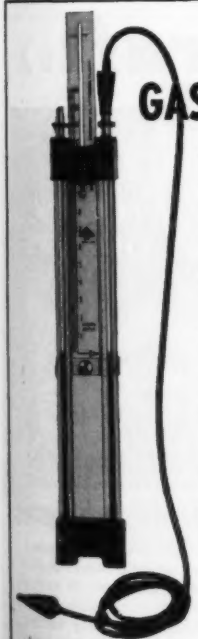
Stainless steel construction. Drip-feed puts just enough water in pan for fastest vaporization. Eliminates scum . . . no stagnant water pan.

Pre-assembly cuts labor time and costs. To install simply cut hole in plenum wall, slip VAPORITE in just as it comes from shipping package.

Get complete information. Write, A-10.

Automatic Humidifier Co.
CEDAR FALLS, IOWA

BACHARACH GAS PRESSURE GAUGE



- Body is transparent, high-strength plastic extrusion.
- Scale features easy readability; made of white plastic, with black scale divisions and numerals; 1/10" W scale divisions.
- Indicating Fluid of 1.9 specific gravity permits pressure readings to 1/10" W over entire scale on gauge of convenient size. Fluid is colored blue for visibility; is non-freezing to low temperature. Gauge is furnished filled ready for use.
- Shut-off Valves are conveniently opened or closed by rotation of knurled discs.
- Scale is adjustable up or down to permit direct reading of pressure.
- Blow-over seal automatically prevents spilling of fluid when gauge is subjected to pressure surges in excess of scale range.
- Body serves as reel for rubber hose.
- For convenient attachment of gauge to gas pipe an adjustable mounting clamp is available as optional accessory.

Gauge supplied with 4 ft. rubber hose and fitting for test connection.

Gauge with scale 0-7" W $11.00 TRADE NET

Gauge with reversible scale — 0-15" W on one side, and 0-8.5 ounces per sq. in. on other side. $14.00 TRADE NET

Ask your Jobber or write for Leaflet 830

BACHARACH INDUSTRIAL INSTRUMENT COMPANY
7301 Penn Avenue, Pittsburgh 8, Pa.

YOUR BEST INVESTMENT

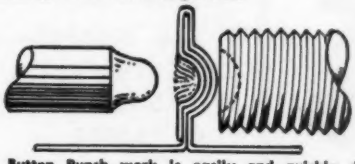
LEVER WHITNEY PUNCHES

No. 6 Punch

This tool is especially adapted for Button Punching or for Templet work. Punch will strip where handle cannot be opened to 90 degrees.

When used as a regular punch, the capacity is 1/4" hole through 3/16" iron. Stock size 1/8" to 9/32".

Punches to within 3/8" of corner in angle iron.



This type of Button Punch work is easily and quickly done with the Whitney No. 6 Punch.

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

Make Stronger Fastenings this easy way

P-K
TRADE MARK REG. U.S. PAT. OFF.

Hardened
Masonry Nails

DRIVE EASILY into mortar, cinder blocks, and other soft masonry without pilot holes . . . into pre-drilled holes in harder materials. **HARDNESS and TOUGHNESS** perfectly balanced . . . they drive in straight to stay tight, even under shock or vibration.

COST YOU LESS and are much simpler to use than plugs, expansion bolts, other devices. Samples free . . . try them. Ask your P-K Distributor, or write: Parker-Kalon Division, General American Transportation Corporation, 200 Varick St., New York 14.

PARKER-KALON®
FASTENERS

wholesaler doings . . .

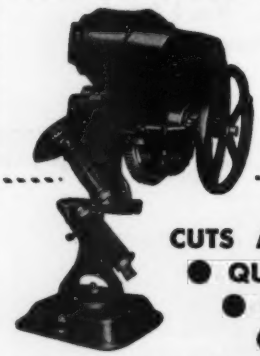
A FEATURE of the open house held by Squire Heating Supply Co. to celebrate the opening of its new Dayton branch was an exhibit of warm air heating and air conditioning equipment by various manufacturers in the field

▸ SQUIRE HEATING SUPPLY CO. recently held open house to celebrate the opening of its new warehouse in Dayton. The new warehouse, located at 1614 Springfield St., will operate in a manner similar to the firm's Columbus operation.

▸ RHEEM MFG. CO. has named Mortemp division of Mechanical Products Mfg. Co., 1727 First Ave., S., Seattle, as distributor of heating and air conditioning equipment in the state of Washington. The new distributor will handle Rheem's entire line of

THE RIGHT SHEAR
FOR ANY CUTTING JOB

MARSHALLTOWN



ROTARY
THROATLESS
SHEARS

CUTS ALL SHAPES—SIZES
● QUICKER
● EASIER
● FASTER

Here's a shear that's right for every job. Speedy — efficient. Cuts up to ¼ inch stock — speed to 6 ft. per minute. Excellent for irregular cutting or straight splitting. Available in hand operated or motorized models. Prompt shipment. Send today for special illustrated bulletin.

MARSHALLTOWN
MANUFACTURING COMPANY
Marshalltown, Iowa

Quickdraft

N-268-QD

Cures all heating-unit draft problems

When you're the "doctor" for furnaces made "sick" by faulty chimneys, *prescribe a cure . . . not a treatment.* Quickdraft . . . the electrical draft inducer . . . ensures the right draft for burning all fuels efficiently and economically. It keeps chimneys dry . . . cures pulsating, smoking and soot problems caused by low, erratic and undependable chimneys. It saves fuel.

Condensed capacity tables provide a fast guide for specifying Quickdraft. Complete engineering data book is available. Write for full information . . . today.

Quickdraft
COMPANY
Dueber-Hampden Building
P. O. Box 87- Canton 1, Ohio

Quickdraft units are now available for equipment having smoke outlets from 6 in. to 30 in. diameter.

gas and oil automatic heating equipment and "Year 'Rounder" air conditioning equipment.

▸ THE PERMAGLAS DIVISION of A. O. Smith Corp. has appointed Hart-Greer, Inc., Birmingham, Ala. a distributor of domestic and commercial water heaters, succeeding Steel City Supply Co. The Sheet Metal Supply Co., La Crosse, Wis. has also been named a distributor of domestic and commercial water heaters.

▸ THE HEIL CO. has appointed Burtchaell Heating Co., Portland, Ore. as wholesaler for furnaces, conversion burners and summer air conditioners to cover the territory comprising parts of southwestern Washington and northwestern Oregon.

▸ JACK ALLEN, Allen Heating Supply Co., Buffalo, has been appointed chairman of the heating code committee of the Buffalo Chamber of Commerce. Mr. Allen will work with the Building Commissioner and Smoke Abatement Div. for better heating systems.

▸ SHANA MFG. CO., INC. has appointed two distributors to handle 1½ to 5 ton water and air cooled air conditioners in the southern California territory — Smallcomb Electric Co. and Ventilating Equipment Co., both of Los Angeles.

In to stay when you use P-K
TRADE MARK REG. U.S. PAT. OFF.

Hardened
Screwnails

for fastening
SHEET METAL to WOOD
WOOD to WOOD
or other fastenings
where you need
NAIL DRIVING SPEED with
SCREW HOLDING POWER

Ask your P-K Distributor for samples and the SCREWNAIL folder, or write: Parker-Kalon Division, General American Transportation Corporation, 200 Varick St., New York 14.

PARKER-KALON®
FASTENERS

Cut Installation Costs!
One hammer blow permanently rivets

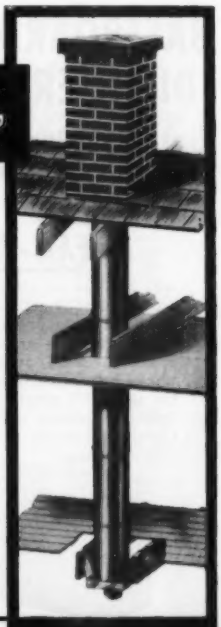
E-Z-ON

E-Z-ON Damper Controls are easily, quickly installed to save you time and money. E-Z-ONS lower initial cost offers you additional savings and extra profits. Start saving money now. . . . Call your jobber today!

LEADING JOBBERS STOCK "EZ-ONS"
In Canada — THERMIDAIRE CORP. LTD. Toronto

M. A. GERETT CORP.
724 WEST WINNEBAGO STREET, MILWAUKEE 5, WISCONSIN

Now!
NEW AIR-JET
"BRICK BEAUTY"



Why bother to build a chimney? Now you can enjoy all the time and money-saving advantages of an Air-Jet packaged unit . . . and, at the same time, increase the value of your homes with a chimney that looks just like brick!

The new "Brick Beauty" is made of embossed aluminum, finished in brick red color with depressed off-white mortar lines. Weighs less than 100 lbs.! Can be installed in one man-hour! And look at these quality features.

Shockproof, high temperature porcelain steel smoke pipe. Special draft top guards against downdrafts. Exclusive rain groove eliminates all leakage. UL approved for use with all fuels. You can take your choice of 2 models in 3 different smoke pipe sizes.

WRITE TODAY
for complete information!
A few distributorships available.
GENERAL PRODUCTS
COMPANY, INCORPORATED
DEPT. B-10
FREDERICKSBURG, VIRGINIA

• A PACKAGED CHIMNEY WITH AUTHENTIC BRICK LOOK

FLANGES THE DUCT
with Amazing Speed!
Less than 5 seconds on short and lighter pieces . . .
Slightly longer on bulkier pieces

MAKES PERFECT DRIVE-CLEATS TOO!

The ONLY tool that does both. A complete drive cleating tool . . . no set-up time . . . no adjustments. Handy to take out to the job when not needed in the shop. Turns idle time into production time. Flanges any square duct up to 20 gauge. Quickly pays for itself in time, material and labor savings.

No. 12 Smith's Cleat Bender (12" wide) . . $49.80*
No. 18 Smith's Cleat Bender (18" wide) . . $78.60*
*F.O.B. Waukegan, Illinois Prices subject to change without notice

PERFECT DRIVE CLEATS fit the duct without the use of a screwdriver.
TREMENDOUS SAVINGS in erection time and labor.

R. E. SMITH
1124 Elizabeth Avenue • Waukegan, Illinois

BASEBOARD DIFFUSERS
Got You Down?

PREMIER'S FAN-AIR

will set you up for profitable sales! Scientifically designed to fill the need for an efficient, practical, easily installed, sensibly priced baseboard diffuser for use with small pipe systems. Damper control. Carefully formed. Attractively finished.

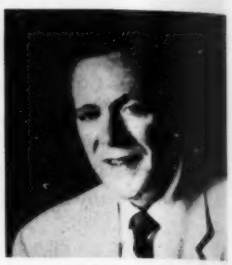
FREE *Write for folder on FAN-AIR Diffusers and 32-page Engineering Guide. Ask about complete FAN-AIR System; CF and PZ Oil and Gas Units.*

PREMIER FURNACE COMPANY
Manufacturers of Warm Air Heating and Air Conditioning Equipment
Dowagiac, Michigan

appointments . . .

▸ KENNETH M. FOURNIER as sales manager for Skuttle Mfg. Co. Mr. Fournier has been with the company for the past 20 years. Frank P. Gibbons has been named sales representative to cover the state of Ohio.

Kenneth M. Fournier



Frank P. Gibbons

▸ H. MELVIN CARNAHAN as sales manager in charge of residential air conditioning and heating for the Airtemp division of Chrysler Corp. S. Anderson, Jr. has been named sales manager in charge of commercial and industrial air conditioning for the division. Mr. Carnahan was previously assistant sales manager in charge of residential air conditioning for the division and before that was vice president of sales of the Sunbeam Air Conditioner division of American Radiator & Standard Sanitary Corp. Mr. Anderson has been with the Airtemp division since 1943.

▸ JAMES F. DONNELLY, formerly assistant manager of the A. O. Smith Corp.'s Permaglas division, as special assistant to F. S. Cornell, vice president and general manager of the company. Mr. Donnelly will make his headquarters in Milwaukee. C. L. Hewitt, Jr. has been named manager of heating products for the Permaglas division. C. S. Pester, former manufacturing superintendent for the division, has been promoted to works manager, succeeding R. E. Friend, who has been named assistant general manager of the division.

▸ MARVIN A. KAGAN as chief engineer of Shana Mfg., Inc. Mr. Kagan was previously chief engineer for Mitchell Mfg. Co.

▸ WILSON C. CARTWRIGHT as manager of the Los Angeles branch of Coleman Co. Mr. Cartwright succeeds Lawrence R. Carney, who has accepted the position of regional sales manager for the Pacific Northwest and northern Rocky Mountain states.

▸ THOMAS D. LEATHERS as district manager of the Pittsburgh area for the L.O.F. Glass Fibers Co. He will maintain offices at 3829 Willow Ave. G. O. Hartzell has been appointed district manager of the Toledo

Don't Touch that Brake!

we can save you money on

"S" Clips

Standard 1 inch

Elbow Sides

With ¾" flange

Drive Clips

Standard 1 inch

Priced below 100 pieces

1 in. wide		1 in. wide
10"— 6.16	3¼"—90'S—14.15	3¼"— 2.24
12"— 7.28	3¼"—45'S—13.75	8 "— 3.92
14"— 8.40	8 "—90'S—19.70	10 "— 4.90
33"—18.50	8 "—45'S—18.90	33 "—13.36

With ¾" flange

Register Head sides

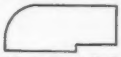
3¼ to 6"

Baseboard 15.64

Side wall 17.24

Top Take off ends

3¼ to 6" — 21.64



With ¾" & Dovetail flanges

On orders of $100 or more—deduct 5%. All orders shipped prepaid — East of Mississippi and North of Mason Dixon Line with check enclosed for order. If not satisfied—money refunded.

AIR SUPPLIES INC.

138 Water St. So. Norwalk, Conn.

FOR SOUND ECONOMY

H&C

KWIK-WAY DAMPER REGULATOR SETS

No. 69 SET
SINGLE BEARING for SMALL DAMPERS

Retractable bolt and quick, easy means of fastening bearing are among features that make this the most convenient and economical set available.

ONE BLOW SETS BEARING SECURELY

No. 70 SET
for LARGER DAMPERS

Identical with No. 69 except with 2 retractable bolt bearings.

HART & COOLEY MANUFACTURING CO.

500 EAST EIGHTH ST., HOLLAND, MICH.

Malco HAND SEAMER

Price $4.95

GREATER SQUEEZING POWER WITH HALF THE PRESSURE

The only hand seamer on the market featuring compound leverage. Well recommended by practical sheet metal mechanics.

- **COMPOUND LEVERAGE**
- **FORGED STEEL JAWS**
- **SPRING RETURN ACTION**
- **FORMED STEEL HANDLES**
- **HAS HAND STOP (pressure plate)**
- **WILL FLATTEN SEAMS IN-**

SIDE A 3-¼" OPENING

- **GUARANTEED TO SATISFY**

OVERALL LENGTH, 8-¼"— WEIGHT, 1-⅛# WIDTH OF JAWS, 3-¼"— JAW DEPTH, 1-⅛"

CONTACT YOUR JOBBER OR WRITE

Malco PRODUCTS

405 EAST 48th STREET MINNEAPOLIS, MINNESOTA

Windmaster® The Modern Draft Control that's "QUIET AS BARE FEET"

Consult Your WHOLESALER

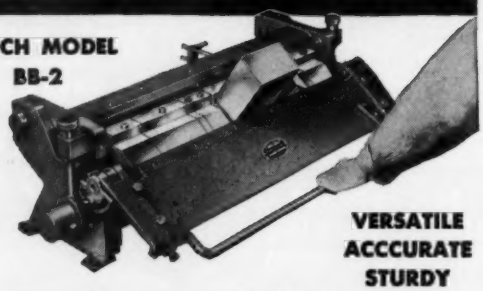
Windmaster® Corporation

43 Vine St. Columbus 15, Ohio

Bending Sheet Metal

UNIVERSAL BOX and PAN

CHICAGO BENDING BRAKE



This CHICAGO hand bending brake is ideal for bending sheet metal up to 16 gauge and 24" wide. Model and experimental shops, production departments find this machine unmatched for single pieces or production runs in folding, box and pan work, and a limitless variety of straight bending operations. Very little experience is required to do accurate and fast work.

Write for full particulars

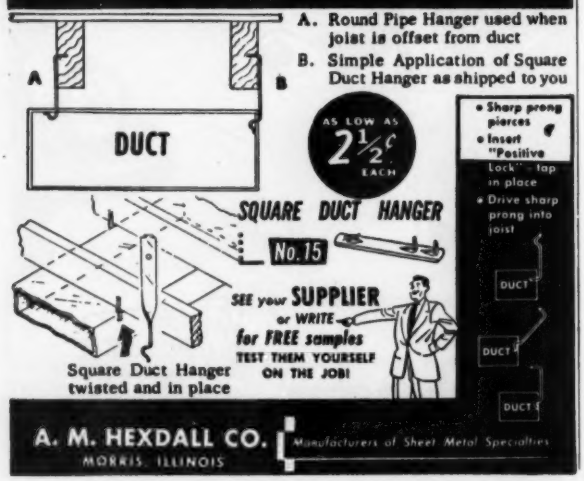
Steel Bending Brakes for over 50 Years 5558

DREIS & KRUMP MANUFACTURING COMPANY

CHICAGO STEEL BENDING BRAKES BOX and PAN BRAKES PRESS BRAKES

7404 S. Loomis Blvd., Chicago 36, Ill.

NEW IMPROVED
SQUARE
DUCT HANGER
With new "Positive Lock" cam action feature . . . No Special Tools! Hammer does the Job! Available in six lengths.
Cam Action Assures "Positive Lock"
PAT. NO. 256,3242


A
B
DUCT
A. Round Pipe Hanger used when joist is offset from duct
B. Simple Application of Square Duct Hanger as shipped to you
AS LOW AS 2½¢ EACH
• Sharp prong pierces
• Insert "Positive Lock" tap in place
• Drive sharp prong into joist
SQUARE DUCT HANGER
No. 15
SEE your SUPPLIER or WRITE for FREE samples
TEST THEM YOURSELF ON THE JOB!
Square Duct Hanger twisted and in place
DUCT 1
DUCT 2
DUCT 3

A. M. HEXDALL CO.
MORRIS, ILLINOIS
Manufacturers of Sheet Metal Specialties

appointments *(Continued)*

area and will headquarter at 2100 Madison Ave. James J. Secor, Jr., named district sales manager of the Philadelphia area, will headquarter at the company's branch office at Narberth, Pa.

William F. Bishop

Robert C. Hughes

▸ WILLIAM F. BISHOP as manager of national account sales and Robert C. Hughes as manager of sales training for the Worthington Corp.'s air conditioning and refrigeration division.

▸ GEORGE ZIMBELMAN, formerly western division sales manager for Armstrong Furnace Co., as assistant general manager with headquarters at the company's Columbus plant. Charles L. Brooks, formerly assistant to the president, has been promoted to sales manager and will assume responsibility for sales promotion operations.

▸ RAY A. REED as acting district manager for the Minneapolis territory of the Janitrol Heating and Air Conditioning division of Surface Combustion Corp. Mr. Reed's territory will include Minnesota, North Dakota, Montana and sections of the states of South Dakota, Wyoming and Wisconsin.

▸ PHILIP C. KOSCH as sales manager for the Bryant division of Carrier Corp. Mr. Kosch joined the division in 1954 as sales training manager.

▸ N. E. HILL as manager of heating engineering for Mueller Climatrol. Richard Signorelli has been named manager of cooling engineering.

▸ J. A. GILMAN as southern division merchandise manager for American Blower Corp. In his new position, Mr. Gilman will provide sales and application engineering assistance to jobbers handling the company's packaged merchandise products and commercial air conditioning equipment.

▸ ROBERT B. GILBERT as national product manager in charge of heating for Rheem Mfg. Co. Previously Mr. Gilbert was assistant sales manager for plumbing and heating for the company's southern Pacific coast region.

NEW Comfortaire

LINE OF FORCED AIR FURNACES DESIGNED FOR SMALL HOMES:

4 MODELS — 70,000 TO 170,000 B.T.U.

Comfortaire H.C. models produce abundant warmth, operate quietly, and are built to precise specifications. Draft diverter built into element allows extra heating surface.

"BABY SAFE" Circulaire

VENTED RECESSED WALL HEATERS IDEAL FOR YOUNGSTERS:

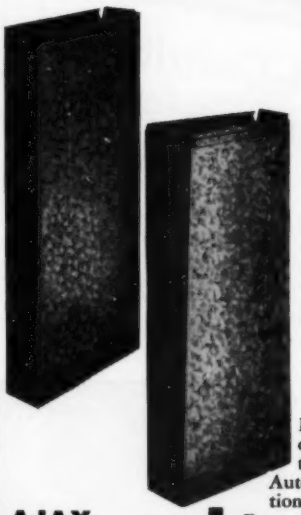
8 MODELS — 15,000 TO 60,000 B.T.U.

Circulaire means quick, fully circulating heat, floor to ceiling comfort, low installation, operational and maintenance costs with Hammel 10 year guarantee.

Hammel
RADIATOR ENGINEERING CO.
Owned and Operated by A. S. Martinson and Associates
1348 Motor Ave. Los Angeles 34.

Write for Catalog

ALL YOUR NEEDS In DUCTS and FITTINGS



AJAX

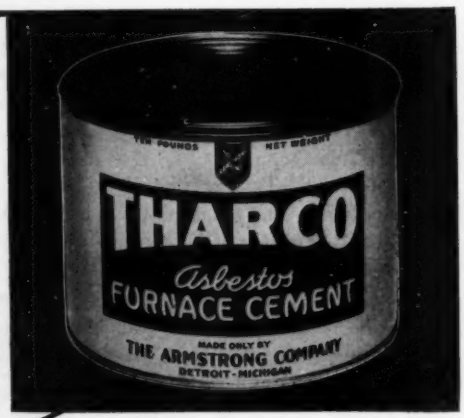
- Highest Quality
- Precision Made
- Quick Assembly
- Forced Air or Gravity
- All Systems

Fittings, Pipe and Duct are die cut and formed, fit up tight and fast with AJAX Automatic Snap Lock connections.

AJAX FURNACE FITTING CO.
216-20 E. Front St.
Cincinnati 2, Ohio

For extra profits, use AJAX Pipe and Fittings to save you installation time and labor.

WRITE TODAY
New complete line catalog complete with helpful data.
DIVISION of
THE CINCINNATI SHEET METAL & ROOFING COMPANY



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THARCO is available in either black or light gray in 1-pound cans to 350 pound drums.

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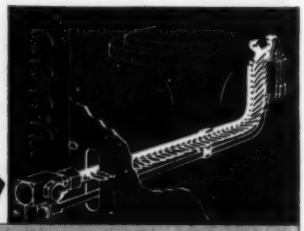

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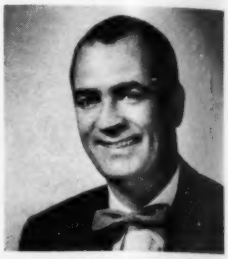
appointments *(Continued)*

▸ ALBERT S. BROSS as vice president in charge of sales for the O. A. Sutton Corp. Mr. Bross will be responsible for the coordination of sales and merchandising for "Vornado" window and central air conditioners.

Albert S. Bross



William F. Steiner

▸ WILLIAM F. STEINER as general sales manager for International Sales Co. Mr. Steiner was previously northern California sales manager for the Day and Night division of Affiliated Gas Equipment, Inc.

▸ HAROLD STRAUB as head of the research laboratory being built by Titus, Inc. where problems of diffusion and distribution of high velocity air will be studied. Mr. Straub was formerly with the University of Illinois.

▸ FRANK L. CASSIDY, Seattle as representative for Rochester Mfg. Co. in the Pacific Northwest, British Columbia and Alaska. His headquarters are at 6916 56th Ave., S., Seattle.

▸ JOHN F. TEMPLETON & Co., Atlanta as representative in the states of Georgia and Alabama for Maid-O'-Mist, Inc.

▸ COMFORT HEATING & AIR CONDITIONING, Lubbock, Texas as distributor of packaged air conditioning equipment for the United States Air Conditioning Corp. in the south plains area.

▸ THE SEMMLER WHOLESALE SUPPLY CO., Detroit as distributor in the state of Michigan for Certified Furnace Corp. The Semmler company also maintains branches in Saginaw and Dearborn, Mich.

▸ ALLIED DISTRIBUTING CO., 3936 Montgomery Rd., Cincinnati as a wholesaler of heating and cooling products for General Electric Co.'s home heating and cooling department. B. B. Baker Co., 1910 Q St., Sacramento, has been named by the company's commercial air conditioning department to handle distribution of packaged air conditioners in parts of California. Heat, Inc., 18 Lincoln St., Fitchburg, Mass. has been appointed wholesaler of packaged air

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with ALLEN'S
Automatic Booster Fan

- Circulates Heat
- Quiet . . . Efficient
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- Saves Heating Dollars
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Warms hard-to-heat ROOMS and BASEMENTS

Built for use in gravity type hot air heating ducts, Allen's Booster Fan can be easily installed in 8, 9, or 10-inch pipe in a few minutes. When mounted, simply plug it into the house current . . . set the control for the most efficient duct temperature . . . and it works automatically, Spring, Fall and Winter. Rubber cushioned throughout, it may be mounted in bedroom pipes without disturbing sleep.

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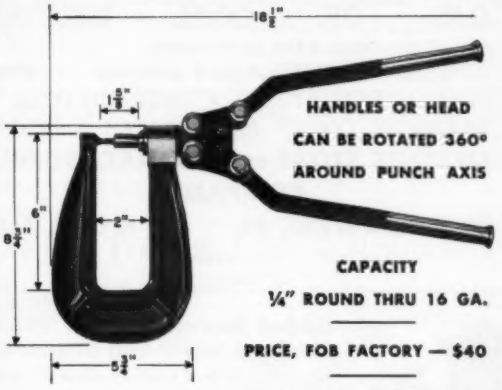

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PRICE, FOB FACTORY — $40

EXTRA PUNCHES AND DIES
1/16" TO 9/32" BY 1/64" — 50c each

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"Will remove the soot from flues."
The heating plant soon overflowed
With bales of yesterdays' news.

Flames roared high,
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At least the papers forced his wife
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To be sure of heating efficiency, use
"CLEAN RIGHT" SOOT REMOVER
NON-CORROSIVE NON-EXPLOSIVE
LEAVES NO RESIDUE
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EASY

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Easy to do . . . Saves time too!

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Clean all kinds of heating plants faster and easier with a Super Red Streak Model SH Furnace Cleaner. Helps sell repairs, new plants. Both wet and dry pick-up. Cleans chimneys from basement. Special non-clog filter bag for oil plants.

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National Sales Agents
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appointments *(Continued)*

conditioners in the states of Maine, New Hampshire and Vermont. The Weathertron department has named James S. Kelly, Inc., Point Pleasant, N. J. a retailer of heat pumps in part of the Ocean county area. Climate Engineers Supply, Inc., 3835 E. 21st St., Indianapolis has been named a wholesaler of heat pumps to cover part of Indiana.

▸ WILLIAM M. BOLDING as sales representative in metropolitan Detroit for Iron Fireman Mfg. Co. Prior to his recent appointment, Mr. Bolding was a sales representative for the Bohn Aluminum and Brass Corp. Robert G. Duncan has been appointed district sales manager for western Massachusetts and the states of Connecticut and Rhode Island. Previously Mr. Duncan was district sales manager for the Timken Silent Automatic division of Rockwell Spring and Axle Co.

▸ THE CONE AND WALLACE CO., Phoenix, as Arizona sales representative for J. F. Pritchard and Co., of California.

▸ ASSOCIATED SALES ENGINEERS CO., 819 N. Virginia St., Oklahoma City as agent to represent the Field Control division of H. D. Conkey & Co. in Oklahoma and northern Texas.

Obituaries

William J. Strangward

WILLIAM J. STRANGWARD, for the past 30 years president of the Forest City Foundries Co., died September 5, 1955 at his residence, the Lake Shore hotel, Cleveland. He was 76 years old. Surviving are his wife; two sons, William P., vice president and general counsel of the Forest City Foundries Co., and Ralph G., director of purchases for the company; four grandchildren, and two brothers.

Cy Perkins

CY PERKINS, president of Perkins Sheet Metal, Inc., Madison, Wis., and president of the Madison Sheet Metal Contractors' Association, died June 16, 1955. Mr. Perkins was well known for his many years of service in local, state and national association activities.

Adolph Winkler

ADOLPH WINKLER, president of A. E. Winkler & Sons, Inc., Milwaukee sheet metal contractors, died July 17, 1955. Mr. Winkler, a past president of the Milwaukee Sheet Metal Contractors' Association, had been active for many years in association affairs on both local and national levels.

Classified Advertising

Rates for classified advertising are 12 cents for each word, including heading and address. One inch $6.00. Count nine words for keyed address. Minimum $2.00. Closing date 20th of month preceding publication.

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HEATING EQUIPMENT

Illinois, Indiana, Michigan, New England, New Jersey & Pennsylvania. Leading manufacturer of gas conversion burners seeks representative to sell complete line of burners to heating trades. Must be calling on sheet metal and warm air heating dealers and/or wholesalers at present time, and should be acquainted with major gas utilities. No replies will be answered unless present field sales representation is clearly defined with full description of sales organization. Address Key 1011, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

AGENTS WANTED — Manufacturer of Prefabricated Ducts & Fittings nationally known — desires sales representative for the states of New York, Mass., Conn. and Western Penna. Write Key 1013, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

SPECIALTY SALES AGENTS WANTED —selling direct to sheet metal contractors and fabricators. Two outstanding, non-competitive, sheet metal, power tools. Both nationally advertised and demonstrated at National shows. Territories in New York, New Jersey, Penna., Delaware, Maryland, D.C., Virginia. Write Key 1015, American Artisan, 6 North Michigan Ave., Chicago 2, Illinois.

lines wanted . . .

LINES WANTED — For Minnesota, West Wisconsin, North & South Dakota. Now handling Blowers, Attic Fans, Filters, Water Heaters, Oil Burner Accessories, Barometric Draft Controls, and similar items. We have our own warehouse for carrying stocks while introducing new lines. We call on Jobbers & OEM Accounts only. Headquarters in Minneapolis. Address Key 1012, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

situation wanted . . .

SITUATION WANTED: — Experienced in job take-off, estimating, layout, selling, project residential heating and air conditioning. Address Key 1014, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

situation open . . .

WANTED — A Sales Engineer with ability to coordinate sales effort — instruct and sell, Nationally Advertised Warm Air Heating and Air Conditioning Equipment and allied products to Dealers in Northern Indiana and Western Michigan. State age — education — experience. Address Key 1010, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

SERVICE SECTION

Rates for display space in the Service Section are $12.00 per inch per insertion. One-inch minimum space accepted. Closing date — twentieth of the month preceding issue.

This section represents an ideal opportunity for manufacturers to get their messages across to readers of a national publication in their field. Whatever you make or sell, you'll find a large, receptive audience, easily reached at a minimum outlay. Plan now to move your products quickly and economically with consistent advertisements in this section.

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For fastening slips or seams on ducts. Will push a "half moon" through 3 thicknesses of 18-ga. steel. No hammering or flattening out to fasten slip to the duct.

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Z

Zatko Metal Products Co. 36
Zink Co., John ..... Inside Back Cover

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JOHN ZINK

CENTRAL HEATING UNITS

gas fired Conversion burners

Your customers will like the economy and efficiency of a JZ Gas Conversion Burner that eliminates coal storage and handling.

JZ Gas Fired Conversion Burner is fully automatic with a choice of electric or gas-actuated controls.

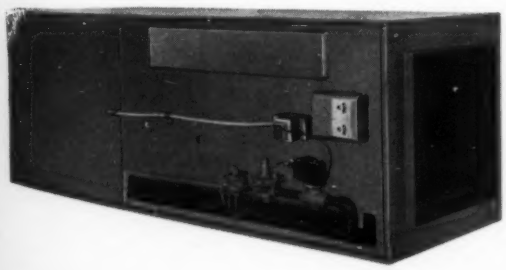
Installation — it is easy to make a workman like job — just bricks in ash pit opening of furnace — and it will fit 98% of the domestic heating plants. Gas Control Valves, pilot and piping are all shipped in a complete package assembly.

One Model #CB-200, on natural gas has input rating of 75,000 to 200,000 Btu. Pipe size ¾". A.G.A. approved.

Central gas heaters

VERTICAL OR HORIZONTAL

Central Heating Units that are universally adaptable; a complete package unit ready for installation. Vertical and Horizontal models of equal efficiency permit installation in basement, attic, service closet or utility room in old or new homes.



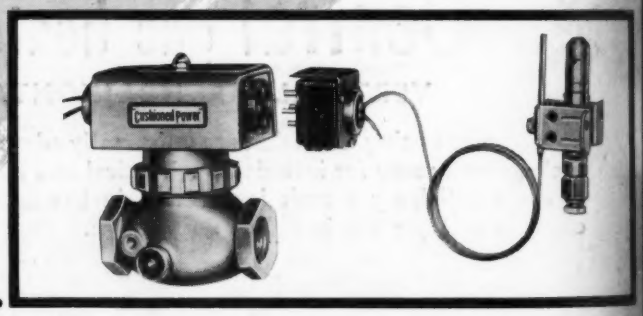
The Horizontal model can even be installed under the house, or for industrial heating can be installed on shelf or balcony; used as a suspended heater or as a duct heater.

Capacities from 65,000 Btu/hr input on natural, mixed or L.P. gas. A.G.A. approved.

Write for illustrated literature and prices.

JOHN ZINK COMPANY
4401 S. PEORIA TULSA, OKLA.

"It's working FINE! Of course, you CAN'T HEAR it. It's one of those new, quiet White-Rodgers 'Cushioned Power' Valves."



in modern gas heating...

QUIETNESS Means Quality!

You can eliminate annoying solenoid "clank" and "snap" with a modern, White-Rodgers "Cushioned Power" solenoid gas valve. It costs no more to add this extra selling feature to your product.

EASY INSTALLATION Saves You Money!

This ingenious "Plug-In" Valve-Pilot Combination is a W-R exclusive specially designed to simplify installation and wiring. The pilot combines a powerful mercury-actuated element with a rugged snap-action switch for positive reliability.

For gas heating controls that assure complete customer satisfaction... specify White-Rodgers.

WR

WHITE-RODGERS *Controls*

FOR HEATING • REFRIGERATION • AIR CONDITIONING

ST. LOUIS 6, MO. • TORONTO 8, ONTARIO